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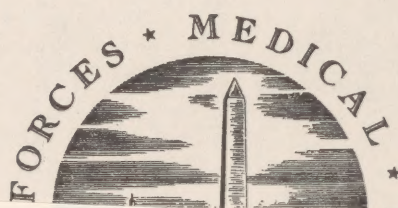
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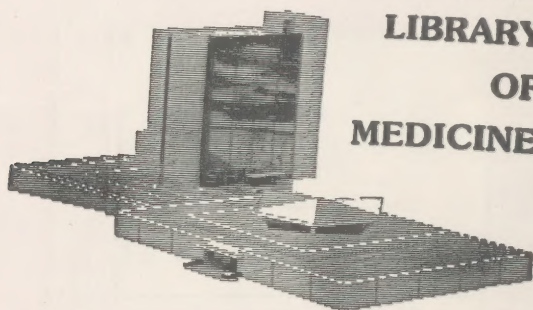
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CIVIL AFFAIRS HANDBOOK *Guide*

PUBLIC HEALTH
IN THE
JAPANESE EMPIRE



WAR DEPARTMENT • NOVEMBER 1944

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BY ORDER OF THE SECRETARY OF WAR:

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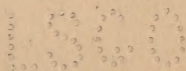
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Note

Civil Affairs Guides and Civil Affairs Information Guides are designed to aid Civil Affairs Officers dealing with problems in theaters of operation, each Guide being focused upon a specific problem in a particular area. These Guides are not basic collections of factual information, as are the Civil Affairs Handbooks, nor are the recommendations (or action programs implied in the Guides) intended to take the place of plans prepared in the field. They are rather designed to point the factual information toward the making and executing of plans by those Civil Affairs Officers assigned to this work in the theaters of operation. *In no sense is a Guide to be taken as an order.* Such orders will be issued in the normal manner.

This Guide was prepared under the supervision of the Committee on Civil Affairs Guides and is approved by the Committee.

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SUMMARY

This Guide presents the objectives and organization for the public health division of civil affairs in the Japanese Empire. The organization is of a pattern suitable for integration with the organization of the existing Japanese Health Department and should facilitate meeting problems likely to be important to public health in Japan. In the discussion of various public health functions and problems some limitations or alterations have been suggested to conform to standard military government policies and procedures. It has not been attempted to develop a textbook of scientific material, but rather to provide a guide for action to the civil affairs officers responsible for the medical and public health problems. It is believed that this guide will not only be helpful to Medical Department officers of civil affairs but will also orient general civil affairs officers in programs of public health and will suggest to them the initial steps to be taken in a public health or medical emergency.

OBJECTIVES OF CIVIL AFFAIRS PUBLIC HEALTH

The field of responsibility broadly known as public health will ordinarily be a major component of civil affairs activities in an occupied country. Its importance rests on the following considerations:

Military operations can be seriously impeded by widespread disease in the civil population, either through extension of disease to the military forces or through disruption of community activities supporting military operations. Responsibility for preventing such an occurrence, while resting primarily upon the commanding general and the chief surgeon of the occupying forces, will usually be delegated to the civil affairs section.

Since public health is an integral part of government, the governing authority in an occupied country must endeavor to protect the civil population against epidemics of preventable disease and provide minimum facilities for medical care. Standards of performance will not exceed those existing prior to military occupation. Public health measures required as a military necessity and in conformity with policies of higher authority will be carried out almost entirely through the use of local resources.

The character of modern warfare, with its rapid movement, utilization of cities for defensive strong points, and aerial bombardment, greatly enhances the danger to the civil population, which frequently sustains grievous injury. Common humanitarianism and the needs as justified by military necessity for securing the good will and cooperation of the civil population will impel the military forces of the United States under such circumstances to assist in providing emergency medical care for civilians who come within their jurisdiction.

PHASES OF CIVIL PUBLIC HEALTH ACTIVITIES

Health activities directed to the civil population of an occupied territory may be divided into the planning, emergency, and organizational phases.

Planning Phase

As in other types of military operations, intelligent planning is essential. Based on the strategic and tactical plans for the military operations as a whole, an attempt should be made to appraise the principal problems in health and sanitation likely to be encountered, assemble adequately trained Medical Department personnel to deal with those problems, outline so far as practicable the job each individual is expected to do, weld the whole into a team, and make provision for transportation and medical supplies with which to implement the health and sanitation program.

Emergency Phase

The emergency phase corresponds to the period of active combat and is limited territorially to the immediate area of combat operations. The principal civil health activities of this phase are directed to providing medical and hospital care, and transportation for the wounded and acutely ill civilians, assuring a supply of a few basic medical items, such as surgical dressings, disinfectants, morphine, and sulfonamide drugs, providing safe water for civilians, and initiating measures urgently needed for control of any communicable diseases present which are likely to become epidemic among the troops.

Organizational Phase

Transition from the emergency to the organizational phase should begin at the earliest possible moment. Proceeding on the basis of carefully prepared plans, the principal civil health activities of this phase are reactivation under military control of the previously existing public health organization, reestablishment of hospital and laboratory facilities, provision of such emergency facilities and services as circumstances and military necessity require, and institution of measures designed to assure safe water supplies and sewage and waste disposal. Inauguration of programs necessary to prevent disease and such disorder as might endanger or impede military operations should follow without delay. Existing public health laws and regulations should be reviewed and those regarded as sound enforced, and additional regulations needed should be drafted for proclamation by the proper government officials.

ORGANIZATION OF CIVIL AFFAIRS HEALTH ACTIVITIES

The organization of civil public health activities will necessarily conform to the organization of civil affairs activities as a whole, which in turn will be determined in part by the organization of the military forces at the theater, task force, and communication zone level. It is the purpose of this section to present the principal functions which the public health division of civil affairs will be called upon to perform, and to suggest an appropriate organizational pattern designed to meet the functional needs.

Experience in several theaters during this war has shown that public health activities constitute a major function of civil affairs. In order to properly fulfill this function, public health should be accorded the status of a major subdivision of civil affairs, coordinated with legal, fiscal, economic, and other major subdivisions.

Since the civil affairs section is an integral part of Army organization there must be a clear-cut chain of command. At every level the chief civil public health officer should be responsible to the chief civil affairs officer of the organization to which he is attached.

Medicine and public health are highly technical subjects. It is essential that there be clear-cut lines of responsibility in matters pertaining to the technical aspects of civil public health. Since the chief surgeon of the theater or task force is the principal advisor in medical matters to the commanding officer of the theater or task force, he (the surgeon) is by implication the senior technical consultant in all matters pertaining to over-all policy in health problems. The chief civil affairs public health officer should recognize the chief surgeon's responsibility and make provision for close liaison with him, to the end that civil affairs health activities may be properly coordinated with the health and medical activities of the military forces.¹ Likewise, close liaison should be maintained between civil affairs medical officers of lower echelons and the surgeons of combat forces operating in the same area. (See figs. 1, 2, and 3.)

¹ The terms "military" and "civil" will be used to distinguish between the combat and supply services of the Army on the one hand and the services for the civil population on the other.

The principal problems of civil affairs health activities can be grouped in four main categories: communicable disease control, hospitalization and medical care, medical supply, and sanitary engineering. While the relative importance of one or another of these groups of problems may vary according to the phase of combat operations and according to the country in question, nevertheless throughout all civil public health operations problems related to each of these categories will likely be encountered. The functional organization of civil public health should therefore be based on this pattern, with key men assigned to each subdivision.

In addition, various special health problems will be encountered. Among these will probably be venereal disease control, tropical disease and malaria control, foreign quarantine, displaced persons, food inspection and vital records, which may be conveniently grouped under Communicable Disease Control Section; maintenance of medical institutions such as leprosaria, tuberculosis sanatoria, and mental hospitals, maternal and child care, nutrition, dental care, nursing service and laboratories, which may be conveniently grouped under Hospitals and Medical Care Section; narcotic control, which may be included under Supply.

Depending somewhat on the character of the country in which military operations are being conducted the control of diseases of animals may constitute an important problem, particularly from the standpoint of food supply. Directional services for programs for the control of animal diseases are provided by civil affairs through officers of the Veterinary Corps. In the Japanese Empire veterinary services are administered through the Ministry of Agriculture and Forestry. In conformity with the general policy of adapting the civil affairs organization to the organizational structure of the country occupied, it may be more feasible to attach those veterinary officers directly concerned with the health of animals to the agricultural section of civil affairs. In this case, however, since the Veterinary Corps of the U. S. Army is an integral part of the Medical Department it will be desirable to have a strong liaison established between this section and the public health section. This may be accomplished by appointing the senior veterinary officer as consultant to the Director, Public Health Section.

It is evident that the organizational pattern suggested above does not conform closely to that observed in many health departments in the United States. While health problems are essentially the same everywhere, the relative importance of special aspects of the over-all problem differs under civil affairs, due to the temporary nature of the civil affairs program, the limited resources in personnel and supplies with which civil affairs must operate, and the paramount importance

of expending effort in directions which give promise of the greatest assistance to military operations.

For example, vital records are a basic part of every health department's program, yet in the civil health program they must be used principally to provide a danger signal to herald the approach of an epidemic which might be a threat to military operations. All other considerations must be subordinated to this primary purpose. In addition, reports on the adequacy of hospital facilities, medical supplies, and food supplies must be obtained from small administrative units of the occupied territory for planning purposes at higher echelons.

Another important factor which influences the organization pattern of civil public health is that the entire program must be conducted largely through the use of local resources in personnel and facilities with a minimum of directing civil affairs personnel. For this reason too, the organizational pattern should be kept as simple as possible, supplementing the administrative services rendered by the main subdivisions with competent consultants in certain special fields.

Welfare in its broad sense and including rehabilitation features will probably not be a function of military government. Yet, emergency relief as to food, clothing, and shelter will in many areas be an important consideration and plans must be made to meet these emergencies. The mission of the public health section to prevent disease will require that there be provided at least a basic diet, sufficient clothing to prevent exposure, blankets for the ill, and shelter for homeless persons. The administration of this program of limited emergency relief may become a responsibility of the public health section of civil affairs.

Organization at Theater Level

At both Supreme Headquarters Allied Expeditionary Force (SHAEP) and Allied Force Headquarters North Africa (AFHQ) civil affairs is organized as G-5 and directed by an Assistant Chief of Staff. Public Health forms a major branch of G-5.

Assuming that this same or similar pattern of organization of civil affairs will obtain, the Public Health Branch requires certain key personnel in order to carry out its major functions of formulation of civil public health plans, recommendation concerning the assignment of personnel, and maintenance of liaison with the office of the chief surgeon of the theater and with other branches of G-5. While it will be desirable to limit the staff of the Public Health Branch, G-5, to essential personnel, the minimum requirements for the planning phase will be a director, and at least one well-qualified Medical Department officer to cover each of the four main subdivisions, communicable disease control, hospitals and medical care, supply, and sanitary engineer-

ing. One of the subdivision chiefs should be designated as deputy director of the Public Health Branch. Much of the detailed work during the planning phase should be delegated to special groups assembled for that purpose. Once the operational phase has begun, it may be possible to reduce the staff of the Public Health Section to a director, a deputy director and an officer familiar with supply procedure. Field operations will normally be under the immediate supervision of the civil affairs staff at task force or country level as indicated in the succeeding paragraph.

Organization at Task Force or Country Level

On the assumption that for a time at least theater headquarters will be at some distance from the various military objectives, it will be necessary to select and organize the basic operational staff for each country as the operational plans develop. The staff should be very similar in organization to the theater staff and conform to the general pattern as indicated above. Initially this staff should be attached to the civil affairs section of the staff of the commanding officer of the task force charged with the conquest of a given country. Specialist consultants in such fields as venereal disease control, malaria control, tropical disease control, maternal and child health, nutrition, veterinary medicine, dental health, and entomology should be attached to the basic staff in such numbers as the situation requires.

Upon occupation of the country and the transition to a territorial organization, this staff becomes the top operating staff of the country. For example, if Japan were the objective, this staff would superimpose itself upon the Ministry of Health in Tokyo, assigned in strategic positions of the health organization, to supervise and direct the functions of the ministry at the policy-making level. Specialist consultants would be assigned in appropriate positions to supervise activities within their specialty. In addition, consultants would make such special investigations and surveys in their field as indicated and serve as technical consultants within their field to the director and to subordinate echelons of civil affairs. The organizational chart (fig. 3) illustrates a functional break-down embodying these principles. (See also app. A.)

Organization at Regional Level

Economy in the use of personnel will require certain geographical subdivisions. Again using Japan as an example, it is obviously impossible to consider assignment of public health personnel to each of the prefectures in Japan. Thus a grouping of prefectures or selections of important areas becomes necessary. The geographical areas within each region should be determined after consideration of several

factors. Among these factors are relative importance to the accomplishment of the military mission, political boundaries and distribution of other civil affairs personnel, distribution of population, political and commercial importance of the area, and availability of personnel, both civil affairs and native. Military developments may make alterations in the distribution of personnel desirable. A geographical grouping based on political boundaries and population

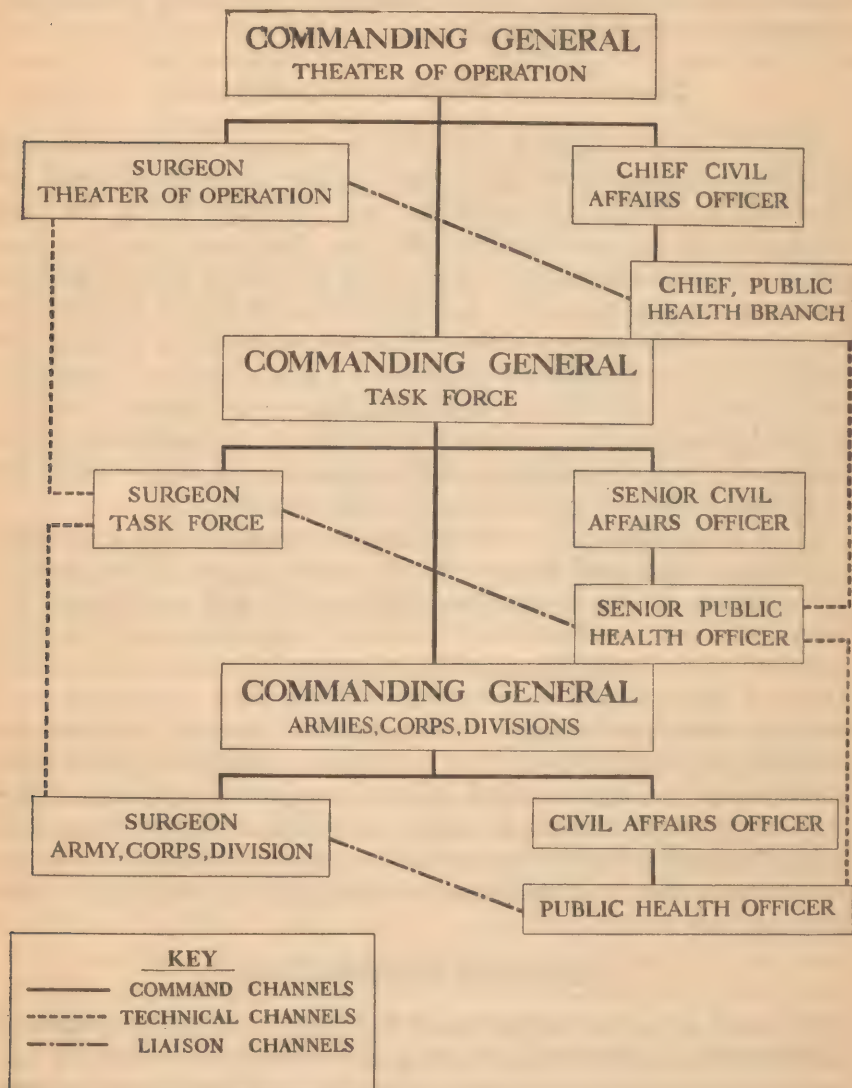


Figure 1.

concentrations is illustrated in figure 4. Some of the less important areas, such as Regions I and VIII, may require little or no civil affairs medical personnel and public health administration may be left entirely in the hands of the native officeholders.

The basic staff for each region should again be functionally similar to that described and have attached specialists as necessary. Each of the four functional divisions should be headed by a capable officer, one of whom serves as the director.

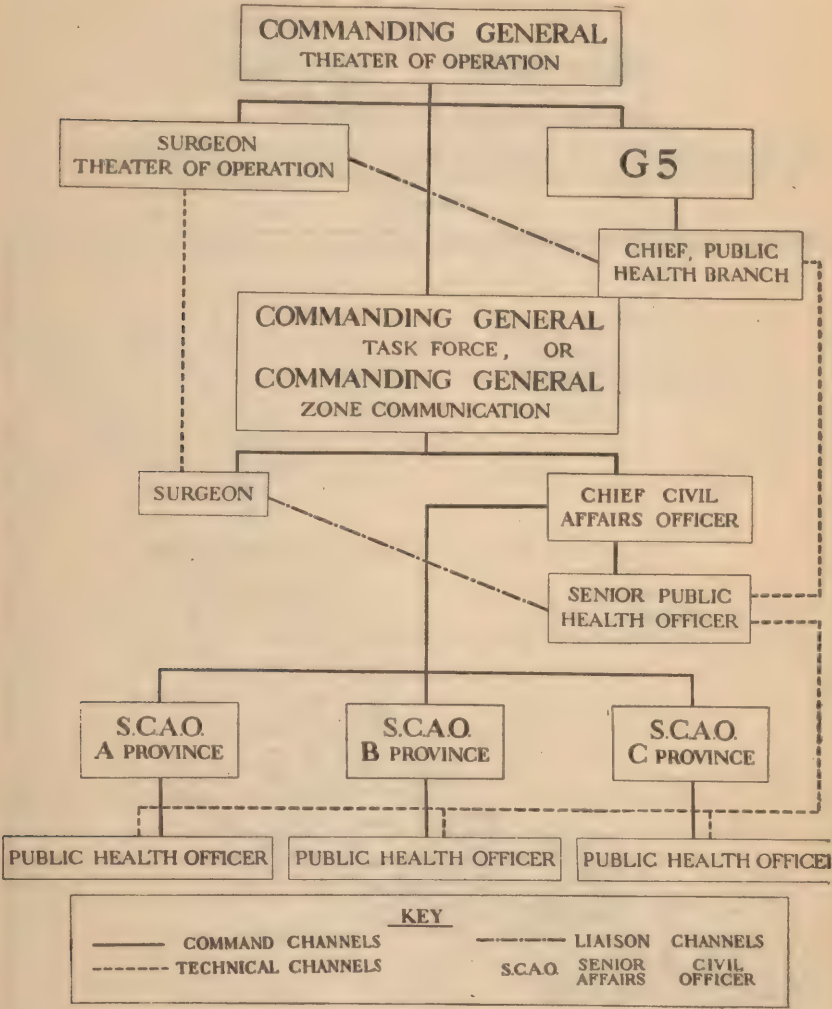
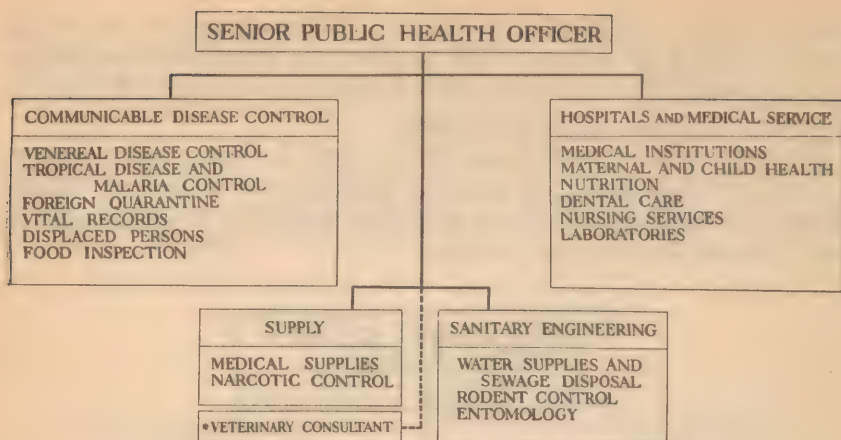


Figure 2.



• VETERINARY OFFICERS FOR CONTROL OF ANIMAL DISEASES WILL BE ATTACHED TO THE PUBLIC HEALTH SECTION OR TO THE AGRICULTURE SECTION.

Figure 3.



Figure 4.

CIVILIAN MEDICAL SERVICE

Provision and maintenance of adequate medical care for civil populations will be an early responsibility of civil affairs administration and comprehensive plans for such care should be developed. The extent and nature of the initial civilian medical care program required will be dependent upon the degree of bombing preceding occupation, the number of civilian casualties, amount of property destruction, previous state of health in the area, and the availability of local medical facilities, supplies and personnel. Certain of these factors cannot be pre-ascertained, and will be apparent only after actual occupation. Consequently, an adequate plan will be one in which all exigencies have been considered, both for initial phases of occupation and subsequent periods. Because of certain geographical and administrative diversity in various parts of a country, a general plan for medical service may be adopted and later adapted to meet specific needs of each city, community, or political subdivision.

Emergency Treatment of Civilian Casualties

In seaboard and industrial cities, or wherever bombing has been extensive, numerous civilian casualties may be expected. Civilian casualties from enemy bombing may occur in certain instances subsequent to the occupation. The problem of treatment and care of casualties may be increased by widespread destruction of hospitals, sanitary and transportation facilities, and inadequacy of supplies and trained medical personnel. Consequently, an inclusive plan for emergency medical service, a prompt survey of available facilities and personnel to assist in the program, and subsequent judicious use of the existing facilities and personnel are essential. In most instances, such pre-existing organizations and facilities as governmental health and welfare agencies, hospitals, dispensaries, and clinics may be used to advantage. The actual operation of the emergency medical program in a community will usually be entirely dependent on native personnel. Local physicians with broad experience and administrative capacity, such as surgeons, public health officers, or

experienced hospital administrators may prove helpful in the operation of the program. Compensation of civilian medical personnel and hospitals when necessary should be in accordance with the fiscal policies determined by Civil Affairs officials.

Responsibilities of public health officer. The responsibilities of the public health officer in charge of medical care in the civil affairs administration of an area are:

1. To determine the type and extent of emergency medical services required.

2. To determine by survey the facilities available for care of casualties and to determine the number of official and voluntary organizations and personnel available to participate in a program of medical care.

3. To assist hospitals to equip and organize emergency medical units; also to make possible expansion of bed capacity in hospitals.

4. To select sites for casualty stations.

5. To plan and establish transportation service for casualties and medical personnel.

6. To stimulate recruitment of local personnel to aid in the medical care program and to provide facilities for instruction of such personnel in first aid if adequate numbers are not already trained.

7. To establish medical supply depots.

Emergency medical field units. In areas of great destruction, basic medical equipment should be assembled in general hospitals, both private and governmental. Emergency medical field units, to include physicians, nurses, and aides, should be organized from the staff of the hospitals. An emergency medical field unit should consist of several squads. A physician should be appointed to supervise the entire unit, and squad leaders in turn should be designated. The size of the emergency field unit should be in proportion to the bed capacity of the parent hospital. As far as possible, all members of field units should have had experience in first aid and in transportation of the injured.

Transportation. In areas where destruction precludes use of vehicles or where vehicles are not available, the evacuation of wounded may be entirely by handborne litters.

Medical and surgical equipment. The medical and surgical equipment for an emergency medical field unit squad consist of a working supply for each physician's team and a reserve supply of sterile dressings and equipment in packs from which the working supplies of the teams may be replenished. The provision of working supplies for each physician in a separate container will permit the squad of a casualty station to split off teams of one physician and assistants who can be dispatched to set up subsidiary first-aid posts,

Casualty stations and first-aid posts. The location of a casualty station should provide safety, shelter, and accessibility; clinics, health departments, health centers and substations, or schools may be suitable. These stations should be stocked with stretchers, cots, and blankets from available supplies and the injured may be directed or transported to them on stretchers by litter teams. The work of the casualty station should be limited to emergency first-aid procedures—the relief of pain, control of hemorrhage, prevention of shock, and care of burns. The seriously injured should be evacuated as rapidly as possible to a hospital and those with minor injuries returned to their homes or assigned to temporary shelters. First-aid posts may occupy a temporary location and should provide emergency first aid for the more severely injured. At these posts, casualties may be classified so as to expedite the transfer of seriously injured to a hospital.

Rescue and litter squads. Rescue squads are groups organized for the extrication of persons trapped in collapsed or demolished buildings. Such individuals should be equipped to render minimal first aid to casualties. Such casualties should be turned over to litter squads for transportation to first aid stations or casualty stations.

Medical depots. Accessible medical depots should be established for storage of essential medical supplies needed in the care of casualties.

Records. If possible, improvised identification tags should be affixed to the injured, and a record of casualties should be kept by each medical team.

Hospitals. The available hospital beds, surgical facilities, maternity services, and children's wards should be ascertained by inventory of hospitals, convalescent homes, and similar institutions. Provisions of additional equipment should be made in such institutions to augment the bed capacity for care of casualties.

Organization of Casualty Care Service

| | <i>Location</i> | <i>Personnel</i> | <i>Equipment</i> |
|----------------------|--------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------|
| 1. Rescue squads. | Attached to first-aid post or casualty stations. | Two to four persons per squad, three squads per aid stations. | Litters. |
| 2. First-aid posts. | Temporary, dependent upon need. | Two to four persons trained in first aid, or nurses. | First-aid kits, blankets, and litters. |
| 3. Casualty station. | Schools, medical centers, health departments. | Emergency field units; numbers in proportion to size of hospital. | Sterile dressings, drugs, instruments, blankets, and litters. |
| 4. Hospital. | Existing hospitals. | Staff. | Usual hospital equipment so far as available. |

Organized Medical Care

Transition of a program for civilian medical care from an emergency type to a stabilized organizational type should be accomplished as early as possible. However, complete dissolution of emergency care programs for casualties should not be undertaken until all danger of bombing has been eliminated. In a stabilized public health administration, the facilities of preexisting government and private health agencies, hospitals, sanatoria, clinics, and dispensaries should be re-established within limits of military government policy. Private practitioners, advantageously located and distributed, may be utilized to supply medical care to the bulk of the civil population. In such a program, civil affairs public health officers serve in a directorial and advisory capacity. Certain groups of the civil population will usually require special consideration; these include infants and children, pregnant women, the aged, refugee groups, and inmates of sanatoria and mental institutions. Facilities for provision of adequate food, medical care, clothing, and shelter should be established.

Supervision of hospitals will be a function of the civil affairs public health officer. Inadequate facilities for hospitalization will have existed in many localities under normal conditions; in war-torn areas, the inadequacies may be accentuated by destruction, increase in disease, and occurrence of casualties. Intact structures suitable for conversion to hospitals may be selected when hospitals have been destroyed; churches, warehouses, Army barracks, store buildings, and schools may serve the purpose. Military forces will have precedence in use of civil hospital facilities for the hospitalization of military casualties. An emergency expansion plan should be developed and equipment and facilities should be provided to expand hospital bed capacity in such institutions as indicated. Reports of beds occupied and available empty beds in every hospital should be sent at regular, predetermined intervals by the local government administrator to the chief public health officer in the area. Readjustment of beds to provide for isolation wards, children's wards, and maternity services may be necessary; in areas where such facilities do not exist they should be established. The maintenance of leprosaria, mental hospitals, tuberculosis sanatoria, and convalescent homes should be perpetuated. Management of hospitals should be by competent and trained native personnel, while general supervision over all hospitals, hospital staffs and the utilization of equipment, should be maintained by personnel of the public health section in the local civil affairs administration.

Registration of medical persons, as physicians, nurses, midwives and dentists should be accomplished as early as possible. This will facilitate planning medical care program by providing information as to numbers, qualifications, and distribution of personnel. Unequalized

distribution of personnel may be rectified by planned relocation; medical qualification should be based on preexisting standards for the country. Supervision of the plans for relocation of medical personnel returning from the armed forces will probably be necessary. Registration of personnel will be facilitated by access to local and national health organization records and the membership lists of professional societies. Particular attention should be given to registration of individuals capable of planning for and attending special groups; these may include obstetricians, pediatricians, midwives and physicians for sanatoria and leprosaria. Training programs in medical and nursing schools may be accelerated when inadequate medical personnel exist. All personnel and facilities of medical and nursing schools should be utilized to maximum advantage in perpetuation of education and training programs.

General medical care may be provided in physician's offices, clinics, dispensaries, and maternal and child health centers; the seriously ill and surgical cases should be hospitalized. Prenatal care may be given in similar centers and normal deliveries done by physicians or midwives in private homes or shelters. Obstetric consultation service should be provided when indicated and delivery of abnormal cases should be in hospital if possible. Isolation for communicable disease may be appropriate in the home or in isolation wards or units of a hospital. For cases quarantined at home, the services of visiting nurses are valuable. There is a State Health Insurance system in Japan covering several million families. The Public Health and Fiscal Civil Affairs officers should become familiar with the administration of this system and assume responsibility for proper supervision.

Adequate stocks of essential medicines, drugs and biologicals should be maintained in medical depots. Release of these supplies should be only on order of authorized medical personnel. Distribution to consumers may be through hospitals, maternal and child health centers, doctors, dispensaries, or commercial pharmacies; these sources of distribution may be stocked from locally available stocks or from medical supply depots. Drug and biological plants and laboratories should be rehabilitated and the manufacture of essential items resumed as early as possible.

LABORATORIES

A prompt survey to determine equipment, supplies, and personnel required for reestablishment of preexisting laboratories, both clinical and public health, should be made. Priority should be given public health laboratories for reestablishment of facilities to do laboratory procedures that are essential in epidemic control; tests of this type would include bacteriological, parasitological, and serological examinations.

During combat phases of occupation, special attention should be given to reestablishment of blood typing facilities and blood banks for emergency care of civilians. Preexisting hospital laboratories should be prepared to perform the following laboratory procedures: blood counts, bleeding and clotting times, blood smear examinations for malaria, urinalysis, examination of stools for blood, parasites and ova, bacteriological smears and cultures for common disease producing organisms, tests for serological diagnosis of syphilis, appropriate agglutination tests, and equipment for post mortem examinations.

Local facilities for manufacture of biologicals should be appraised and manufacture of all biologicals essential to epidemic control should be restored as promptly as is possible.

COMMUNICABLE DISEASE CONTROL

The emergency nature of military government activities will indicate some modifications in the policies and procedures usually found in communicable disease control programs of a stabilized public health program.

The basic policy of military necessity will direct initial concern to the control of those diseases or conditions which endanger the health of the occupying troops.

The basic policy of maintenance of health and welfare of the governed will direct attention secondly to control of diseases which might assume epidemic proportions, cause suffering, unrest or dissatisfaction among civil populations. Endemic diseases at low levels of incidence will rarely justify immediate concern.

Attempts to raise standards of public health above prewar levels in an occupied country will not be feasible because of the limitations of supply and personnel.

Control measures which offer immediate results will be preferred to long-range programs, which may not be effective for several years.

The structure of the existing health departments and health regulations should generally remain unchanged. Because of probable shortage of trained public health personnel changes in the existing health staffs should be kept to the minimum consistent with security and urgent political necessity. Existing and reasonably sound procedures are preferable to new procedures which, though technically superior, are unfamiliar. Cooperation of native health and medical personnel is so important that moderate compromises in technical procedures are justified.

A suitable system by which communicable diseases will be promptly reported is indicated. Early knowledge of existence of diseases of epidemic character is essential to proper control. Diseases of particular importance such as cholera, plague, typhoid and the dysenteries, smallpox, and typhus should be reported immediately by the most expeditious means to the civil affairs public health officer. Any unusual numbers of cases of undiagnosed febrile diseases should be immediately brought to the attention of civil affairs public health officers. Immediate steps should be taken to establish the diagnosis and institute the necessary control measures to avert an epidemic.

In the following discussion of individual diseases, emphasis will be placed upon practical actions to be taken in both the preepidemic period and after outbreaks have occurred.

These discussions are not to be considered a substitute for good professional judgment related to the problem at hand. They serve rather as a guide for planning purposes, and indicate the standards of public health which are considered feasible under military government. To nonmedical civil affairs officers, it may indicate essential measures necessary before a complete analysis by a public health officer can be made. (See SGO Cir. LTR 33—Treatment and Control of Certain Tropical Diseases; TB MED 47 Control of Diseases of Respiratory system and other Diseases transmitted by discharge from Respiratory Tract.)

Amoebic Dysentery

Distribution and prevalence. This disease is extremely common throughout every part of the Japanese Empire. In Japan proper the disease is most prevalent during early summer months and is said to be more common in the interior of the country.

Epidemiology. The etiological agent is *Endameba histolytica*, both trophozoites and cyst forms being transmitted from person to person by contaminated food, water, or by flies. The extensive practice of fertilization with night soil in all parts of the Far East provides innumerable opportunities for transmission of the infectious agent. The incubation period varies from 2 days in severe infections to 2 months; commonly 3 to 4 weeks. Cases should be considered infectious until repeated microscopic stool examinations are negative for trophozoites and cysts. Infected persons may harbor the cysts for many years without clinical signs.

Recommended program of control. It is considered impracticable to attempt reduction of incidence as a routine measure. Troops stationed in the area should be warned of the danger of eating uncooked foods or drinking water which has not been boiled; in some instances it may be practical to destroy the cyst by hyperchlorination (see Sanitary Engineering). All native eating establishments should be placed "off limits" for troops and a stool examination should be performed on natives acting in the capacity of food handlers at Army messes.

Bacillary Dysentery

Distribution and prevalence. This disease is extremely common throughout the Japanese Empire. Japanese reports also refer to a "dysenterylike" disease of unknown etiology called "ekiri," occurring commonly among infants and children.

Epidemiology. The etiologic agent is *Shigella dysenteriae* and other species of the genus *Shigella*. Sources of the agent are the bowel

discharges of patients and carriers, and transmission is directly through infected food and water or indirectly by flies. Objects contaminated by discharges of a patient or carriers may be a source. The incubation period is 1 to 7 days; persons remain infectious until the organism disappears from bowel discharges. A small proportion remain carriers for long periods. A relative and nonpermanent immunity develops.

Recommended program of control. It is not considered practicable to attempt reduction of incidence as a routine measure. Reliance should be placed on a sanitation program to keep the dysenteries at a low limit of incidence. Troops stationed in the area should be warned of the danger of eating uncooked food or drinking water which has not been boiled or chlorinated. In mass feeding programs (communal kitchens, refugee camps), every effort should be made to preserve high standards of sanitation. A fly-control program should be instituted; particular attention should be given to protection of kitchens and messes from flies.

The occurrence of epidemics is usually limited to instances where large groups of people have obtained food or water from a common source. In such instances, attempts should be made to determine the source and sanitary safeguards should be inaugurated to prevent recurrence. The public should be warned of the dangers of the disease and of methods possible for individual protection.

Cholera

Distribution and prevalence. Epidemics of cholera were reported in Japan Proper in 1932, 1937, and 1938. The disease is endemic in Korea and the last epidemic reported was in 1933. Cholera was a serious disease problem in Formosa for many years; cases are known to have occurred in 1941. The enforcement of strict quarantine measures and the free use of cholera vaccination by the Japanese did much to reduce incidence of the disease in the prewar period. It is not known to what extent the anticholera vaccination program has been continued since the war.

Epidemiology. The etiological agent is the *Cholera vibrio* (*Vibrio comma*) which is transmitted from bowel discharges and vomitus of infected persons to susceptible individuals through contaminated food and water and by flies. Ten percent of contacts may be healthy carriers. Articles freshly soiled by discharges of infected persons may be sources of infection. The incubation period is 1 to 5 days, usually 3. Cases remain communicable ordinarily for 7 to 14 days, but much longer if the patient becomes a chronic carrier.

Recommended program of control. A system of reporting cases which insures prompt notification and recognition should be adopted.

Cases or suspected cases should be held in strict isolation during the communicable period; when possible, bacteriological examination of stools should provide the criteria for release. All measures to improve general sanitation in an area should be stressed. A cholera immunization program in areas where the disease has been reported is desirable; the goal of such a program should be to raise the level of immunity in population to a degree incompatible with occurrence of epidemics. The proportion of immunized persons necessary for this will be contingent on several factors, such as previous incidence of cholera in the population and standards of sanitation.

Upon notification of existence of cholera, a prompt and thorough investigation for sources of infection should be instituted. Search should be made for unreported cases and carriers. Potability of public water supplies, milk, and any sources of food common to a majority of the cases should be studied. Strict isolation and quarantine should be imposed on all cases, carriers and contacts. Contacts should be promptly immunized. Restriction of population movement will be necessary. Thorough disinfection of the premises of the case should be performed before release. All public eating establishments or in some cases, the entire community should be placed "off limits" to troops.

Stress should be placed on isolation technique of the case. Flies should be eliminated from contact with the patient or his dejecta. Stools, vomitus, and foods left by the patient should be burned or disinfected by other satisfactory methods. The public should be notified that all drinking water must be boiled and all food thoroughly cooked.

Dengue

Distribution and prevalence. This disease occurs throughout the Japanese Empire except for northwestern China and Manchuria and is most prevalent in coastal areas. It may occur in any areas in which the *Aedes mosquito* is found.

Epidemiology. The etiological agent is a specific virus and is transmitted to humans by the *Aedes mosquito*, usually the *A. aegypti* but at times by *A. albopictus*. Incubation period is 7 to 9 days after the bite of the mosquito, and patients may infect mosquitoes from a few hours before clinical onset to the third or fourth day of the disease. These mosquitoes become infectious for new hosts in 8 to 11 days and remain so for life. Diagnosis is based on clinical symptoms. The disease is rarely fatal, but frequently appears in epidemic proportions and may cause extensive morbidity in troops. In most instances, an attack of dengue confers permanent immunity; exceptions to this are recorded.

Recommended program of control. The disease is unlikely to be a major problem among civilians since epidemics rarely occur among natives of an endemic area. For protection of troops, mosquito control measures in the proximity of military encampments is indicated. Since the two common *Aedes* vectors are domestic mosquitoes, attention should be especially directed to elimination of collections of water in artificial pools as flower pots, rainbarrels, and dumps. Mosquito control activities in a cantonment area is a responsibility of the tactical forces; civil affairs sections are responsible for these activities in extracantonment areas.

Even in epidemics the disease is mild with negligible mortality. The course of the disease is self-limited. There are no satisfactory control measures except mosquito control.

Diphtheria

Distribution and prevalence. The incidence of diphtheria in Japan Proper remained essentially the same in the 4 years preceding the war, approximately 25,000 cases yearly. In the 7 years preceding the war, incidence of the disease increased in both Korea and Formosa.

Epidemiology. The etiological agent of the disease is the *Cornibacterium diphtheria* (Klebs-Loeffler bacillus). Transmission is direct by secretions from the nose and throat of cases and carriers or by infected milk or milk products. The incubation period is usually 2 to 5 days. Cases remain infectious until the bacilli have disappeared from lesions or secretions of the nose and throat.¹ Diagnosis is made from clinical symptoms and findings and demonstration of the organism in secretions of the nose and throat. A virulence test should be made if practicable where positive throat cultures are reported 3 weeks or longer after onset of the disease.

Recommended program of control. Cases should be promptly reported, isolation and quarantine instituted, and concurrent disinfection done on all articles in contact with or soiled by discharges from the patient. Infants and young children in intimate contact with the patient should be given passive immunization by antitoxin. Older children and adults should be observed daily for early symptoms and attempt should be made to raise levels of immunity in the child population of the community by active immunization at the age of 9 months.

In event of epidemics the same measures previously mentioned should be actively pursued.

¹ Ordinarily this period is 2 to 4 weeks, but may be several months.

Encephalitis (Japanese B)

Distribution and prevalence. Cases of this disease occur throughout Japan Proper but have been most numerous in the prefectures of Okayama, Kagawa, Hiroshima, Ehime, Hyogo and particularly in the region of the Inland Sea. This disease has been reported in Formosa, particularly the northern part with a seasonal prevalence from June to August.

Epidemiology. The etiological agent is a specific virus and is transmitted from man to man by the bite of a mosquito. The virus has been demonstrated in the following mosquitoes: *Culex tritaeniorhynchus*, *Culex pipiens* and *Aedes togoi*. There is some evidence that a tick (*Ixodes persulcatus*) may be a vector. Diagnosis is made from clinical symptoms and findings, spinal fluid examination and demonstration of the virus in the blood and spinal fluid. Neutralization and complement fixation test demonstrate the development of a specific antibody in the blood of convalescents.

Recommended program of control. Suspected cases should be promptly reported and isolation and quarantine instituted. Patients should be protected from mosquitoes. Search for prior unreported cases among intimate contacts should be made, but to date this measure has been of no practical value in control.

Measures for the control of both Culicine and Aedes mosquitoes should be instituted with intensification of the previously mentioned program, particularly in areas about troop encampments.

Filariasis

Distribution and prevalence. Filariasis occurs throughout the Japanese Empire and is most common in Japan proper in the Provinces of Nagasaki, Shizuoka, Kochi, Saga, Kumamoto, Kagoshima, and Okinawa

The disease is endemic in Formosa and Korea, being most frequent in the southern portions of both countries.

Epidemiology. The etiological agent is a small worm belonging to the nematode group. Several species of nematode or filariids are known to infect man; *Wuchereria bancrofti* is the only one reported in Japan. *Culex fatigans* is the only reported vector although the possibility of other mosquitoes acting as vectors should not be disregarded. After the mosquito takes a blood meal from an infected person with circulating filaria embryos, the embryos develop into infective larvae in the mosquito in 14 to 21 days. The larvae are injected by the mosquito into the blood but cannot be demonstrated until at least 9 months after exposure; elephantiasis is not likely to develop for several years. Diagnosis is by clinical symptoms and findings and demonstration of the embryos in the blood.

Recommended program of control. In endemic foci, epidemiological and entomological surveys should be made for incidence, reservoirs, and vectors of the disease. Control measures should be based on survey findings and suitable antimosquito measures should be undertaken in the proximity of troop encampments. *Culex fatigans* breeds in collections of dirty water as found in septic tanks and rainwater in tin cans. Screening of sleeping places is valuable since the mosquito characteristically feeds at night.

Influenza

Distribution and prevalence. Influenza occurs in the Japanese Empire about as it does in other parts of the world, tending to develop in waves of varying severity. No studies have been reported showing the distribution according to specific strains or virus. No epidemic comparable in severity to the 1918 pandemic has occurred in recent years.

Epidemiology. The etiological agent is a filtrable virus. So far two distinct types of virus have been obtained, A and B. Each of these types covers a number of strains with a rather wide range of immunological character, but the difference between A and B strains appears to be complete in the immunological sense, and the clinical and epidemiological characters of influenza A and influenza B also seem to be different. It is probable that no other main types of influenza virus exist.

Transmission is believed to be by direct contact through droplet infection. The factors determining the occurrence of epidemic waves of influenza are not understood. A fair degree of strain immunity and perhaps some degree of species immunity is believed to occur as result of infection. Evidence on the usual duration of naturally acquired immunity is conflicting. A vaccine containing antigenic components of both A and B strains, prepared from chick embryo yolk sac material appears to confer definite protection against disease due to these strains. The vaccine can as yet be produced in only limited quantities and will probably not be available for widespread use among inhabitants of occupied countries.

Recommendations for control. Epidemic waves with low case fatality rate call for no special control measures.

Outbreaks of greater severity may justify measures to reduce opportunity for spread by prohibiting the gathering of unnecessary crowds.

A point of great importance is that many epidemic diseases which offer a more serious threat to the community masquerade under the diagnosis of influenza. In the presence of a reported rise in influenza cases, steps should be taken to obtain verification of the diagnosis in a selected sample of cases in order to rule out diseases such as typhus

fever, typhoid fever, plague, malaria, or others for which control measures are available. The diagnosis of influenza ordinarily will have to be made on the basis of clinical findings and by exclusion of other diseases. Where facilities are available, attempts should be made to confirm the diagnosis of the influenza by virus isolation and serological tests.

Leprosy

Distribution and prevalence. This disease is endemic in Japan Proper and there are numerous leprosariums on the islands. There are reported to be approximately 25,000 lepers in Korea and inadequate facilities for hospitalization. In Formosa, it has been estimated that there are 2,000 lepers with institutional facilities for one-half that number.

Epidemiology. The etiological agent is *Mycobacterium leprae*. The sources of infection are the discharges from leprous lesions. Intimate and long contact with infected individuals and some other as yet undetermined factors are necessary for transmission. Patients with open lesions must be assumed to be infectious. Patients with demonstrable acid-fast organisms in smears from skin or mucous membranes are potentially infectious though no ulcerative lesion exists. The incubation period is from 1 to several years. Diagnosis is by clinical signs and demonstration of the *Mycobacterium leprae*.

Recommended method of control.—Cases should be promptly reported and isolated in leprosaria, if practicable. As a temporary expedient, a patient may be cared for in a general hospital or on his premises under suitable regulation. Release from isolation should not be granted until a condition of arrest has been present for at least 6 months as determined by clinical observation and absence of the acid-fast bacilli on repeated examination. Released patients should be reexamined periodically, the suggested interval being 6 months. Concurrent disinfection should be carried out on all discharges and articles soiled with discharges from the patient. Investigation of the source of infection should be undertaken in cases of apparent recent origin, although determination of the source is often a matter of difficulty. In areas where leprosy is endemic, care should be exercised in billeting of troops. (See SGO Cir. Ltr. 180—Leprosy.)

Malaria

Distribution and prevalence. Malaria occurs in practically all parts of Japan proper but is most common in the low-lying districts of Kyoto, Niigata, Gumma, Tochigi, Mie, Aichi, Shizuoka, Shiga, Gifu, Aomori, Fukui, Kochi and Okinawa prefectures. It is stated that the disease is common in Korea constituting one of the leading causes of death. In Formosa, the disease is especially prevalent in the low-

lying lands of the west coast. In Japan, Ryukyu Islands, Formosa, and Korea, *A. hyrcanus* var. *sinensis* is the most important vector with *A. aconitus* of secondary importance.

Epidemiology. *Plasmodium vivax* type of malaria is the most common in Japan proper; in Formosa and Ryukyu Islands *P. falciparum* type prevails. Data on types are not available for Korea. The etiological agents are protozoan parasites of the class Sporozoa and the family Plasmodiidae. The common human infections are caused by *P. vivax* (vivax malaria), *P. Falciparum* (falciparum malaria), and *P. malaria* (malariae malaria). This disease is spread from man to man through the agency of specific Anopheline mosquitoes. Normally one species of Anopheline transmits malaria in a given area, but occasionally two species may be involved among the many species of Anophelines present. A part of the life cycle of the parasite occurs in the mosquito and approximately 2 weeks must elapse before the mosquito can transmit the disease to a new susceptible. The incubation period between the bite of an infected mosquito and appearance of clinical symptoms is 8 to 21 days. Diagnosis is established by presence of clinical symptoms and demonstration of the parasite in the blood.

Recommended control program. Existing malaria control programs should be reestablished but it is not considered practicable to attempt an extension of control measures except so far as health of troops may be affected. Civil Affairs officers should establish liaison with surgeons of Army installations and assist the local commanders in the selection of troop encampment sites; selected sites should be at least 1 mile from important Anopheline breeding areas. In endemic malarious areas, it may be advisable to evacuate civilians from a radius of 1 mile of troop encampments. The most valuable method of control for immediate results is the elimination of adult mosquitoes from the houses of the natives by spraying with insecticides. In areas adjacent to semipermanent encampments, engineering or larvicidal control is justifiable if the breeding places of the malaria vector is known. (See Mosquito Control, under Sanitary Engineering.) If the breeding places of malaria vectors are not known, they should be determined by survey.

Potential conditions for a large scale outbreak of malaria are created when malaria carriers from an endemic area are transported to districts where Anopheline vectors are present in large numbers. Under such circumstances, large numbers of new susceptibles are infected and a true epidemic may occur. Construction incident to military operations or destruction of present drainage systems by bombing may at times create a more favorable environment for the Anopheline mosquito and in such instances, malaria incidence may rise precipitously because of increased number of Anophelines.

In certain groups, such as refugees or working parties, suppressive treatment may be indicated. Atabrine 0.1 Gm. (1.5 grains) daily after the evening meal should be given for 2 weeks prior to, during, and for 2 weeks after exposure. If atabrine is not available, quinine sulphate 0.64 Gm. (10 grains) daily after the evening meal may be substituted. (See TB MED 6 and 42, Data from the field on Malaria Control; TB MED 65, Drug suppressive treatment of malaria; and TB MED 72, Treatment of Clinical Malaria and Malarial parasitemia.)

Plague

Distribution and prevalence. Epidemics of plague have occurred occasionally in Japan proper; no cases have been reported in the 2 years preceding the war, although sylvatic plague is frequent in the southern islands. The disease has not been reported in Korea since 1919 or in Formosa since 1928; it is endemic in Manchuria. The rat population in many areas of the empire is great and is likely to be augmented by break-down in sanitary control.

Epidemiology. The disease is caused by *Pasturella pestis*. In the bubonic form, it is transmitted from rat to man by the bite of fleas, genera *Xenopsylla* and *Ceratophyllus*. The pneumonic form is transmitted directly from man to man by discharges from the nose and throat. Accidental transmission (autopsy, surgery) may occur. Plague is an epizootic among domestic rats. Sylvatic plague exists as a disease of rodents, ordinarily remaining endemic. Sudden increases in the number of susceptible rodents may allow development of a rodent epidemic. Upon death of rodents from plague, the infected fleas seek new hosts, often man. The incubation period is commonly 3 to 7 days, occasionally as long as 14 days.

Recommended program of control. Determination should be made of prevalence of human cases in the area in recent years. Estimates of rat populations, particularly in seaports, should be made from time to time. Police and other civil officials should be instructed to notify authorities of unusual numbers of dead rats in the area. Rats found dead should be subjected to autopsy for evidence of plague. Live rats should be trapped at regular intervals and examination made for infected fleas. Careful supervision of rat control in harbor areas should be exercised. Physicians should promptly report suspected cases of either pneumonic or bubonic forms.

In epidemics and extensive program of rodent extermination should be instituted, care being taken to protect personnel against infection. All methods of proved efficiency should be used. Extensive rat proofing of buildings will probably not be feasible. Insecticides, as DDT, should be used on property that is flea-infested. Particularly strict isolation and quarantine of pneumonic cases are indicated; the

contacts of pneumonic cases should be quarantined for 5 days. Patients should be hospitalized if practicable; all patients should be in screened, vermin-free rooms. Concurrent disinfection should be done of sputum and articles soiled therewith in pneumonic type of the disease. Disinfection by thorough cleaning should be done, with fumigation to kill rats and fleas. The bodies of persons dying of plague should be handled with strict antiseptic precautions. Personal prophylaxis to avoid droplet infection must be carried out by those who come in contact with the sick. Masks of closely woven cloth with mica windows should be worn over the head and to the shoulders. A large gown and rubber gloves drawn over the sleeves of the gown should be provided. These articles should not be removed from the sickroom until disinfected. Travel into and from plague areas should be rigidly restricted. Immunization for plague has proved increasingly effective. For persons subjected to unusual exposure (physicians, nurses) prophylactic sulfadiazine is recommended. The dose suggested is 4 grams daily (1 gram every 4 hours).

Schistosomiasis

Distribution and prevalence. This infestation is common in Japan Proper, being especially prevalent in the southern part, the prefecture of Hiroshima, and the village of Katayama. The disease is common in Korea and a few cases have been reported from southern Formosa.

Epidemiology. In Japan the *Schistosoma japonicum* is the etiological agent, the source of infection being fresh water containing the intermediary snail host contaminated by human excrement containing the ova of the parasite. The ova hatch in the water and enter the snail host; there multiplication occurs and swimming larval forms called "cercariae" develop. Cercariae leave the snail and upon contact with the skin, penetrate it to gain access to the blood stream. At least 1 month and usually 3 elapse before that person is excreting ova. Infected persons remain infectious as long as ova are contained in the stool. Diagnosis depends on clinical symptoms, history, and demonstration of ova in the stools.

Recommended program of control. Control consists in breaking the chain of man to snail to man. This can be accomplished by proper regulation of sewage disposal, restriction of drinking or swimming in infected water, or the elimination of snails from these waters. Infected snails do not occur in salt waters, only in fresh water. During the period of military government it is not considered feasible to initiate a long term project for elimination of this disease. Troops should be warned of the dangers inherent in swimming or wading in fresh water in endemic areas and they should be prohibited from entering water known to be infected.

Smallpox

Distribution and prevalence. Smallpox is occasionally encountered in all parts of the Japanese Empire; in Korea, epidemics were reported in 1921, 1936, 1937, and 1940. In Japan Proper, compulsory vaccination in infancy and again at about 10 years of age has probably kept the incidence of the disease relatively low.

Epidemiology. The disease is caused by a specific filterable virus, which is contained in the discharges of skin lesions, feces, and urine. Transmission from person to person is by contact, which need not be intimate. Cases are infectious from onset of symptoms until the complete disappearance of all skin lesions. Incubation period of 8 to 16 days.

Recommended program of control. Reinstitute and support compulsory and preexisting programs of vaccination. The goal of such programs shall be to secure a proportion of immunes in the population sufficient to prevent epidemic spread. This proportion will vary, dependent upon such factors as overcrowding, migration of populations, previous incidence of the disease, and distribution of the population as regards rural and urban areas. Initiate measures necessary to insure prompt and efficient reporting and isolation of cases.

The occurrence of the disease in unusual incidence in an area should prompt immediate investigation by the medical officer. To determine the extent of the disease, search should be made for unreported and undiagnosed cases. Isolation and quarantine should be instituted. Mass immunization should be done, starting with all contacts and expanded to include entire populations in sections where epidemic outbreak is threatened. Restrictions on travel into and from infected areas may be indicated.

Trachoma

Distribution and prevalence. Trachoma is common throughout the Japanese Empire and accounts for widespread blindness.

Epidemiology. The etiological agent is a filterable virus and the sources of infection are secretions and purulent discharges from the conjunctive of infected persons. Transmission is by direct contact with infected persons and indirectly by contact with articles freshly soiled with the infective discharges. The incubation period is undetermined. Cases remain communicable during the persistence of conjunctival lesions. Diagnosis is made from clinical findings.

Recommended program of control. Cases should be reported and children should be excluded from school. Isolation of the patient is not practicable but each patient should be instructed in precautions against spread of secretions of the eye to others by common use of articles. Concurrent disinfection of discharges and articles soiled

therewith should be carried out. Investigation of the source of infection should be undertaken by examination of the family and intimate contacts of the patient. The use of public towels or toilet articles should be eliminated. Routine examination of the eyes should be done on all children admitted to camps or institutions. Troops should be informed of the importance of personal cleanliness and the avoidance of direct or indirect contact with the discharges of patients.

Tuberculosis

Distribution and prevalence. This disease is one of the major public health problems in the Japanese Empire and is a leading cause of death. Human types occur throughout and bovine types where cattle are raised.

Epidemiology. The etiological agent is *Mycobacterium tuberculosis* (hominis or bovis). Sources of infection are discharges from nose, mouth, bowels, and urinary tract of human cases; the discharging lesion of bone, joints, and lymph glands; articles freshly soiled with such discharges, or milk from tuberculous cattle. Transmission is direct, or through contaminated articles, or milk. The incubation period is variable dependent on the type of the disease, dosage, age, and other factors. Cases remain communicable as long as the specific organism is eliminated by the host. Diagnosis is made from clinical findings, roentgenographically, and by demonstration of the organism.

Recommended program of control. All milk products should be pasteurized. It is unlikely a program of elimination of tuberculous cattle can be initiated soon enough for beneficial results during the period of military government. Existing programs for tuberculosis control and the care of tuberculous patients should be reactivated, but it will probably not be feasible to attempt an increase in this program during the period of military government.

Typhoid-Paratyphoid Fever

Distribution and prevalence. These diseases are very prevalent in all parts of the Japanese Empire due to the universal practice of fertilization with night soil. In Formosa, typhoid is reported to reach epidemic proportion every summer, especially in the urban areas.

Epidemiology. The etiological agent for typhoid is *Eberthella typhi*; *Salmonella paratyphi*, *schottmulleri* and *hirshfeldi* are the agents of paratyphoid. The incubation period for typhoid is usually 7 to 14 days, for paratyphoid, from 4 to 10 days. Persons remain infectious during the entire course of the disease and approximately 2 percent of typhoid patients become chronic carriers. The diseases

are diagnosed by clinical symptoms and findings, demonstration of the organisms in stool, urine, or blood, and by agglutination reactions.

Recommended program for control. Principal reliance should be placed on the sanitation program to keep these diseases at low levels of incidence. An adequate system of reporting should be developed to keep the civil affairs officer currently informed so outbreaks may be anticipated and appropriate control measures instituted. Native eating establishments should be placed "off limits" for troops and routine stool examinations should be done on all native food handlers in Army messes.

In an area threatened with an epidemic of typhoid, a prompt investigation should be instituted. Examination should be made of water supply, milk supply, and food-handling establishments, as indicated, to determine the source of infection. Search should be made for unreported cases. Isolation of patients and thorough disinfection of dejecta is essential. Vaccination of all contacts, and, in serious epidemics, mass immunization of populations may be indicated. The public should be instructed that drinking water should be boiled and food thoroughly cooked. Epidemiological investigations should be continued throughout an epidemic to determine new sources of infection.

Typhus Fever

Distribution and prevalence. Disease statistics in the past for typhus fever in Japan do not differentiate the three principal types: epidemic typhus, tsutsugamushi disease, and murine typhus. The last two are definitely known to occur and the first (epidemic typhus) very probably does.

Epidemic typhus. The large increase of typhus cases, reported as type unspecified, totaling 864 for the first 6 months of 1941, suggests a spread of epidemic typhus since the other two typhus fevers do not occur in epidemic proportions. Sporadic cases and small, limited outbreaks of probable epidemic typhus in the Japanese have been previously described due to the disease being brought into Japan by infected Koreans and Manchurians. Lousiness is known to be present among Japanese living in the colder mountainous regions. Increased malnutrition and poor sanitation because of the war would tend to cause a greater number of cases. Although no definite epidemics of epidemic (louseborne) typhus have been reported, it is safe to assume the presence of epidemic typhus in Japan.

Murine typhus. From 25 to 50 cases per year of murine typhus have been reported in Japan up to 1940, distributed in the following localities: Kagoshima, Kumamoto, Nagasaki, Tokuoka, Shimane, Okayama, Kagawa, Hyogo, Osaka, Kyoto, Shiga, Gifu, Aichi, Nagano, Shizuoka, Tokyo, and Chiba. As expected, it is much more prevalent in urban

seaport communities where man and rats are in closer and more frequent contact.

Tsutsugamushi disease (scrub typhus). Approximately 200 cases of tsutsugamushi disease occurred yearly in the period from 1908 to 1935 and 50 or less per year until 1940, the last year reported. It is confined to the northwestern part of the island of Honshu. The endemic foci are restricted to the flood areas of the Sinano and Akano rivers in Niigata prefecture, the Omono in Akita Prefecture, and the Mogami in Yamagata Prefecture. Most of the cases occur in hemp workers during July and August after the river waters recede and the hemp is being harvested.

Control measures. Of the three diseases, epidemic typhus presents the most pressing health problem because it is likely to flare up into widespread epidemics unless rigorously controlled.

Epidemic typhus. Preventive measures are directed toward destruction of the louse which transmits the causative rickettsia from man to man. Dusting the louse infested persons, and his clothes, belongings, and dwellings with DDT powder has been found not only to destroy the lice present, but in addition will prevent reinfestation because of residual insecticidal properties of the DDT powder. Unless removed by washing or laundering, this dusting will prevent louse infestation for 3 or 4 weeks. Methyl-bromide fumigation employing a specially made fumigation chamber or plasticized bag is useful for delousing clothes and equipment. Since methyl bromide is an odorless, colorless gas poisonous to man, it must be used with certain precautions and only by personnel familiar with its properties and use. It is important to realize that DDT does not kill louse eggs or rickettsiae and methyl bromide does not destroy rickettsiae or prevent reinfestation with lice. It is desirable to steam sterilize the clothing of hospitalized patients to insure death of the causative rickettsiae. The judicious use of one or a combination of methods should be adopted depending upon the situation. Vaccination with typhus vaccine at least 1 month prior to infection protects by at least making the disease much less severe, if not completely preventing its development. For all personnel likely to be exposed to typhus cases or louse infested persons, immunization with typhus vaccine, followed by a stimulating dose every 2 or 3 months during exposure is required. Personal cleanliness, frequent washing of clothes, elimination of overcrowding, and adequate nutrition are important secondary measures in the control of lousiness and consequently the spread of typhus.

Murine typhus. Rickettsiae causing murine typhus fever are transmitted from infected rats through fleas to man with the reservoir of infected rats being maintained by the cycle, rat to flea to

the rat. The prevention of the disease in humans depends essentially on rat-control measures such as poisoning, trapping, and starvation of the rats. Destruction of fleas infecting homes, pet animals, etc., by DDT may play a minor role in prevention. Fortunately, the disease is mild and never spreads to great numbers of people because of the mode of transmission.

Tsutsugamushi disease. To control the spread of tsutsugamushi disease, main reliance is placed upon protection against the bite of the larval form of the mite which transmits the etiological agent of the disease. Exposure of the human skin to the larval mites should be avoided whenever possible. The body must be well covered with clothes impregnated with mite repellants, sleeves rolled down, trouser legs tucked into shoetops, shirts and collars buttoned before entering mite infested areas. Anti-mite fluids (dimethyl phthallate or dibutyl phthallate) which repel and kill mites by contact are available. They are applied by hand or spray to the clothes, particularly around the outer surface of all openings, such as sleeve and trouser cuffs, fly, shirt collar, etc. Lying or sitting down on mite-infested grasses must be avoided. Pillows and mattresses should not be stuffed with grasses which may harbor mites. Camp sites should be cleared of vegetation down to the bare earth by mowing, scraping, and burning. As soon as practicable after any possible exposure, a bath using plenty of hot water and soap with scrubbing of the skin to dislodge attached mites and a complete clothes change afterwards are strongly advisable. (See TB MED 45, Notes on Certain Infectious Diseases; and TB MED 31, Scrub Typhus fever.)

Venereal Disease

Distribution and prevalence. Venereal diseases including syphilis, gonorrhea, and chancroid are prevalent throughout the Japanese Empire.

Epidemiology. Infected persons transmit the disease to others by sexual contact. Prostitution, legalized in Japan, is an important method of spread.

Recommended program of control. Emphasis should be placed on control measures for syphilis.

2. Provisions should be made for the collection of data concerning the incidence of the venereal diseases. These data may be derived by compulsory individual case reporting by physicians, clinics, and hospitals, and periodic questionnaires as to total number of cases under treatment.

3. Treatment facilities must be provided in hospitals, clinics, or outpatient services.

4. Free distribution of drugs to physicians together with suggested outline of treatment.

5. Measures for case finding previously used by the health department should be reestablished, but primary attention should be directed to location of sources of infections of military personnel, particularly sources of syphilitic infection.

6. Within the continental United States, the Army is committed to the policy of repressing prostitution. Such a policy is commendable and should be carried out whenever possible. In Japan no attempts have been made to repress prostitution. Instead, it has been the policy to segregate and "regulate" prostitution through routine periodic examinations. It is very doubtful that a program of repression will succeed. Repression has been extremely difficult and not altogether successful in the United States where public opinion backs it. It will be even more difficult and less effective where civil authorities and the public are not sympathetic. Not only will the efforts fail, but the attempt to impose policies in opposition to the population's usual way of life will result in hostile attitude toward the military government.

It is not believed, however, that anything can be accomplished by periodic examinations of prostitutes. The military government should not interfere with the policies of the civil authorities with respect to the prostitution problem as it affects the civil population. However, specific measures for the protection of troops should be imposed.

7. It should be the responsibility of the military authorities to place all segregated prostitution districts "off limits" and institute military policing of streets to reduce clandestine prostitution to a minimum. Legal measures should be taken against prostitutes found soliciting military personnel. Existing laws and regulations should be used as the basis for legal action if these regulations will accomplish the results expected. However, should local laws prove ineffective, ordinances or orders may be published by appropriate military government authorities.

Military government authorities should assist commanding officers of troops stationed in the area in the establishment of prophylactic stations as conveniently as possible to the principal places of exposure.

If penicillin is available in sufficient quantity, its use in rapid treatment centers for civilians should be authorized. This would be of particular importance in "leave areas" to reduce the level of civilian infection.

Coincident with the above measures, it is expected that local commanders of troops will stress venereal disease control measures, such as the issuing of individual prophylactic packets free of charge to all

personnel upon request, the promoting of an intensive education program among troops warning them of the dangers of venereal disease and advising them of the methods of prevention, and the adequate provision for recreation on military reservations, to lessen the desire to visit civilian communities.

8. During the planning phase, a venereal disease control plan should be carefully prepared. The plan should include a study of the laws and regulations affecting prostitution and a draft of the necessary revisions to be published.

NUTRITION

The nutrition of civil populations will be a primary concern of the public health section in civil affairs. The relationship of nutrition to the maintenance of health and to diseases of endemic and epidemic character is well recognized. The responsibility of the medical department in prevention of epidemic diseases directs the attention of all medical officers to the nutritional deficiencies which induce decreased local resistance and predisposition to epidemics. It is probable that the general health of populations is more affected by inadequacies of food and food supply than any other factor. Moreover, such inadequacies are of a character likely to produce civil unrest and dissatisfaction prejudicial to the military effort.

Foods locally available and necessary supplements from Army sources should be provided in adequate quantities to meet the per capita caloric level as predetermined by higher authority. Certain limitations of food supplies and problems of transportation impose restrictions on the level of calories per capita which can be provided. Consequently, with restricted caloric levels, a system of judicious and effective distribution is essential for carrying out an adequate nutrition program. The public health officer should act in an advisory capacity to other civil affairs officers charged with responsibility of provision and distribution of foods for civil populations. Effective liaison will insure distribution in accordance with needs.

Assessment of Nutritional Status

A survey of the quantities of local foodstuffs and the nutritional status of the population should be accomplished as early as is practicable. The presence or absence of starvation and nutritional deficiency diseases should be a guide to the types and quantities of foods needed, and programs for their distribution. The frequency and location of food thefts may provide information indicative of local conditions of nutrition. Checks of the nutritional status of such special groups as infants, children, adolescents, and pregnant women should be done as early as possible. These groups demonstrate early the results of food inadequacy and consequently require special consideration in plans for feeding.

Adequacy of diet may be determined by reference to various tables of established requirements for the variety of nutrients. A number of requirement levels have been established, but the most suitable is the "Minimum Allowances of Dietary Essentials" prepared by the Food and Nutrition Board of the National Research Council.

The assessment of the nutritional status of individuals in a population may be made by physical examination (including dietary histories), laboratory methods, or by a combination of both methods. The methods selected may be made simple or detailed and complex; the extent and exactness of the survey should depend on the object of the survey, the availability of appropriate laboratory equipment, factors of time, and the availability of competent personnel. In general, the more simple procedures should be the only ones required. Various symptoms and physical findings of nutritional deficiency have been indicated in tabular form. (See Table 1 and Table 2, App. C.) The various symptoms and physical findings are rarely specific or diagnostic alone, and should be considered as suggestive only. A few well-established symptoms and findings, however, as night blindness and typical skeletal changes, are reliable and diagnostic of vitamin A and D deficiencies, respectively. In general, a combination of symptoms, physical findings, and perhaps laboratory studies, may be essential for definitely classifying the nutritional deficiencies. Special laboratory facilities for diagnosis of nutritional deficiencies will probably not exist under many circumstances.

Prevention of Dietary Deficiency

Prevention is the maintenance of normal nutritional health in average individuals by means of a natural diet. The components of a natural diet should be varied since variety tends to insure qualitative adequacy. Each public health officer in plans for feeding should consider the availability and cost of foods and the dietary customs and habits of the people who are to consume the foods. Conclusions that dietary habits and customs exert an unfavorable influence on nutritional status should be made only after careful observation and consideration, since it has been shown that natural selection often results in adequate dietaries. Acceptable and adequate substitute foodstuffs should be available before questionable native food practices are discontinued, since as a rule food habits are deeply ingrained in the people. Not uncommonly, the deficiencies resulting from habit and custom are related to modern developments of processing and preservation. The preference for a highly milled and polished rice by the peoples in certain areas of the orient has been productive of a high incidence of beriberi and for this

reason in Japan legislation has been instigated pertaining to the milling of rice so as to preserve the anti beriberi factors in the grain.

Protection Against Dietary Deficiency

Protection against nutritional inadequacy applies to particular classes or groups of individuals, especially susceptible to nutritional deficiency disease. It includes infants and young children, adolescents, pregnant and nursing mothers, the aged, certain groups of workers exposed to occupational hazards, and persons with disease predisposing to nutritional deficiency. The circumstances and predisposition of these groups to nutritional deficiency may require the addition of special food supplements or chemical preparations to their dietaries. The use of special kinds of natural foods and natural concentrates is preferred to the use of chemical preparations.

Relief of Dietary Deficiency

The relief or treatment of nutritional deficiencies belongs to the realm of chemical medicine in all but the milder deficiency states which are amenable to simple dietary measures. These mild deficiencies should be relieved by an adequate natural diet. The severe deficiencies are specific medical problems to be treated medically as indicated, often with pure vitamins or chemical products. The basic principle of returning to a natural diet as soon as is possible applies, however, even in these florid cases; such diets protect against recurrence of the deficiency state and the appearance of other nutritional disorders.

MATERNAL AND CHILD HEALTH

Expectant and nursing mothers, infants, and children below 15 years of age, are groups in civil populations which will require special consideration in the planning and administration of a civil affairs program. It is unlikely that any other groups in a population will be affected as adversely by prolonged dietary restriction, destruction of homes and sanitary facilities, lack of medical care, and the psychological trauma of modern warfare. Existing services for maternal and child health should be reviewed in the light of policies established by higher authority.

Maternity care in Japan is provided largely by well-trained midwives who visit the patient in her home during pregnancy, deliver her at home, and provide post partum care. Midwives refer all complicated cases to physicians. The more than 60,000 certified midwives are carefully supervised by several hundred official and circuit midwives. There are relatively few prenatal clinics in Japan—less than 100 in 1938. The midwives and more than 5,000 public health nurses provide prenatal care and give advice in home visits. If maternal mortality statistics are a reliable index to the effectiveness of maternity care in Japan, it can be considered as good as in the United States. The provision of adequate food for mothers may be the most important health measure need for this special group. Inquiry should immediately be made of leading nutritionists and obstetricians in Japan concerning the nutritional deficiencies observed in pregnant women in various parts of Japan. Special allowances of certain foods or supplementary vitamins may be indicated. If special allowances are to be made, all midwives and public health nurses should be so advised in order that they can notify their patients.

Infant Care

Most Japanese babies (85 percent plus) are breast-fed, usually for approximately 2 years. Advice on infant care is provided by the midwives, public health nurses, and in several hundred infant health centers. The number of infant health centers (250) reported in 1938 would make it appear that they are only located in a few of the larger

cities. Milk is difficult to obtain in Japan, and is probably urgently needed by infants not breast-fed, and by the younger children.

Methods of distributing dried or canned milk provided by Civil Affairs along with simple instructions for proper preparation will most likely be urgently needed. It is reported that many Japanese mothers begin the feeding of solid foods to their babies at about 1 year of age by chewing rice and then giving it to the baby. This habit may explain some of the numerous cases of infant gastro-intestinal infections. Fruits or vegetables as used by adults are usually added to the infant's diet before 2 years of age. Nutritional deficiencies of infants and young children including rickets were reported in 1938 to be fairly common in some parts of Japan. Special allowances of food and supplementary vitamins for children may be indicated. The methods of distributing such allowances will probably vary with areas depending on the number of health centers in operation and the efficiency of the "neighborhood associations" used by the Japanese for food rationing.

There are more than 1,000 permanent nurseries and almost 6,000 seasonal nurseries in Japan. Information concerning the occupancy and use of these nurseries is not available.

Immunization

Vaccination for smallpox is compulsory—reports as to whether given during first year of life or upon entrance to school are conflicting. The established procedures are believed to have been effective and should be continued. Typhoid and diphtheria immunizations are not compulsory. In the communicable disease control section of this guide it is recommended that immunization for diphtheria be given to as many children as possible at approximately 9 months of age. Typhoid immunization of contacts is recommended, and in serious epidemics, mass immunization.

The most important cause of death of infants and young children is diarrhea and enteritis; 74,812 deaths under 2 years of age occurred from this cause in 1938. Ekiri, a disease resembling infantile dysentery, is often confused with similar diseases, and has persistently prevailed in various parts of the country from ancient times. Victims of Ekiri are principally children from 2 to 6 years of age. Epidemics are frequent in summer and autumn. The chief nurse of a Tokyo hospital reports that mothers are taught to give their children a dose of castor oil as soon as diarrhea or drowsiness are observed and immediately to bring the child to the hospital. Hospital treatment by colonic irrigations, intravenous fluids, and a second dose of castor oil after 12 hours was a successful treatment for cases detected early. For neglected cases the mortality was high.

Information concerning control of diarrheal diseases, especially the preparation of food and fly-control will probably be the most important health education for mothers of young children.

Shelters

Season, climate, composition of the population as to age and sex, and extent of destruction will determine the need for shelters in bombed-out areas. In selecting available structures for shelters, suitability will depend upon location, sanitary aspects, fire hazards, and facilities for providing heat, ventilation, toilets, laundry, and water supply. Groups requiring shelter may include families, infants, children, or adolescents separated from their parents, persons with communicable disease, persons with mental disease, and pregnant women. The staff and equipment required for each shelter will depend upon its purpose and the composition as to age and sex of its occupants. In shelters for children, attendance by a staff member throughout the whole day and night is essential; moreover, certain safety devices to protect children from injury, and certain conveniences for children's care should be included.

Additional Services for Children and Mothers

Care of orphaned and lost children, restoration of lost children to their parents, and control of unemployed and predelinquent adolescents are problems which may arise. The problems cannot be divorced from general aspects of maternal and child health; consequently, plans and organizations to handle them could be consolidated with the other material and child health services. Displaced persons present a special problem as regards feeding and medical care.

SANITARY ENGINEERING

The purpose of this section is to outline general procedures to be followed by Civil Affairs Medical Officers with reference to water supply and purification, sewerage and excreta disposal, mosquito control, refuse disposal, and other sanitary engineering matters in the Japanese Empire.

The extent to which such procedures are undertaken should be dependent upon minimum requirements for adequate protection of occupying troops of the United Nations, the prevention of threatened epidemics, and the preservation of the health of the civilian population at the level prevailing before occupation. Unless extensions or permanent improvements to water supplies and sewerage or waste disposal facilities are necessary for United Nations troop installations, satisfactory operation of hospitals or refugee camps, or to prevent major epidemics, the required funds, materials, and labor should be entirely from local sources.

Water Supply and Purification

Maximum health protection should be accomplished by advantageous use of existing facilities. It is not intended to install water systems or treatment plants in areas not previously served by such facilities, except as considered essential for the activities of the armed forces. The work of rehabilitation of water systems should be under the supervision of a trained sanitary engineer.

In initial stages, where a water supply installation has been rendered inoperable and retail distribution of water is necessary, 5 gallons per person per day of safe water should be provided. When existing public supply and purification facilities are operable, operation rate should be at normal or less than plant design capacity.

Where an existing public water supply system is unable to function, water distribution should be by tanks, Lister bags, or carts, pending repair of supply and treatment facilities under supervision of a trained sanitary engineer. When no public supply existed in the prewar period, and wells, springs, or similar sources of supply were used, fixed treatment plants nor distribution systems should not be provided. When tanks, Lister bags, or carts are used for distributing water, one

water point should normally be established for each 300 actual population. Under these conditions, adequate facilities for dispensing water to individuals should be provided.

Where facilities for bacteriological examination are available, the bacteriological standards of the U. S. Public Health Service will be followed. Otherwise, water conforming to the requirements for chlorine residuals should be considered potable. Except where and to the extent that they interfere with effective chlorination or other necessary treatment, color, turbidity, iron, or other dissolved materials should not be removed or pH modified unless facilities are already available in an existing plant

In all facilities of an occupied area, a chlorine residual of 0.4 parts per million should be maintained following an initial contact of not less than 30 minutes in the commonly used portions of water distribution systems which draw water from properly operated filter plants or from subsurface water sources. All unfiltered surface waters should be chlorinated to maintain 1 part per million residual chlorine as provided in existing U. S. Army directives; exception to this may be made when in the opinion of the public health officer amoebic dysentery is a hazard. Under such circumstances, a chlorine residual of 2 p. p. m. should be maintained for 30 minutes (the pH of the water being 7.5 or less), whether the water is distributed by pipe lines or from water points.

The simplest types of water treatment should be provided. Mobile and portable U. S. Army filter units are suitable for emergency installations pending reestablishment of service by public plants. In areas in which amoebic dysentery is prevalent, the rate of filtration through the above units should be limited to 6 gallons per square foot of filter surface per minute and filtration must be preceded by coagulation and settling.

Preference should be given to subsurface water supplies.

Pipe sizes, motor and other electrical equipment characteristics are usually at variance with United States standards. Maximum use should be made of industrial or war materials plants, to obtain pipe, pumps, motors, and engines.

Excreta and Sewage Disposal

Wherever troops are stationed or hospitals or refugee camps are located, or wherever there is justification because of disease, facilities for excreta or sewage disposal should be installed. Elsewhere, such facilities as previously used should be utilized with minimum modification.

Usually pit latrines, constructed in accordance with FM 21-10, should be standard in unsewered areas. When conditions for their use

are unsuitable, pail latrines may be utilized. Collections should be in tight tank wagons or by replacement of used pails by clean, empty pails. Disposal of pail contents should be by burial, incineration, discharge into sewers, or other approved means.

Except in troop installations, construction of new sewage collection and disposal facilities should be provided entirely by local funds, labor, and materials. Existing sewerage systems and treatment plants should be repaired and placed in service, making maximal use of local resources. Chlorination should not be utilized as a method of sewage treatment except under unusual conditions and then only on the advice of a qualified sanitary engineer. The facilities for sewage treatment for hospitals, refugee camps, and troop encampments should be of the simplest applicable type; these should ordinarily consist of a septic tank of local materials, designed in accordance with the Engineering Manual, OCE, by which disposal of the effluent is into the soil or body of water of adequate volume to prevent nuisance.

Refuse Disposal

In populated areas, existing facilities for refuse disposal should be utilized to the fullest, without change, unless modification is fully justified by the presence or threat of disease.

The sanitary fill method of disposal (TB ENG 1, 28 December 1943) should be used, where soil conditions permit. Elsewhere, the methods described in FM 21-10 will be followed.

Technical supervision by a qualified sanitary engineer should be provided, in communities of large population, to insure adequate collection and disposal of wastes.

Mosquito Control

Policies regarding mosquito control should be based on the prevalence of diseases transmitted by mosquitoes. In general, mosquito-control measures should be instituted under the direction of a qualified sanitary engineer only for the protection of occupational installations, including hospitals and refugee camps, or to prevent or control serious epidemics. It is probable that both anopheline and culicine control will be necessary in some areas.

Major drainage should be held to a minimum, reliance being placed on minor drainage and larviciding. Control measures should be extended over areas sufficient to provide adequate protection of personnel, generally to a distance of at least 1 mile.

Special attention should be given to the location of all installations in reference to the prevalence of mosquitoes, both anopheline and culicine.

Surveys to determine the type and prevalence of disease-bearing mosquitoes should be made. Experience and knowledge gained by Army medical officers and malaria survey units of the U. S. Army should be utilized to the maximum in obtaining data on which to base control measures.

Malaria control units, similar to those of the U. S. Army should be organized utilizing so far as possible local personnel, labor, equipment and material. The program of control should be closely coordinated with the U. S. Army units working in the same area, and these Army units should be utilized, so far as military conditions permit, for general correlation and supervision of the mosquito control work.

Rodent Control

Bubonic plague is endemic in the Japanese seaports. Seaport prefectures from which plague is most frequently reported are Osaka, Hyogo, Kakawa, Nagasaki, and Tokyo. There have been no epidemics since 1910, but sporadic cases occur almost yearly. Sylvatic plague is reported frequently from southern Kyushu. Endemic typhus fever (murine typhus) and Japanese river fever (tsutsugamushi fever), spread by a mite which infests rodents, occur. There are some 32 species of rats reported in Japan. The prevalence of flea-infested rats makes epidemic outbreaks a potential hazard.

Routine catches and examination of rats to determine the presence of infected fleas are desirable. In all cases where plague is found or whenever there is evidence of excessive deaths among rat populations, a vigorous rodent control campaign should be initiated to protect all occupational installations, shipping and port areas. When rodent-borne disease constitutes a definite threat to the public in areas other than those occupied, rodent control measures should be initiated, utilizing local funds, labor, and material when available.

All rodent control programs should be under the direction of a qualified rodent control officer.

FOOD SANITATION

General sanitation in Japan Proper is not comparable to that of Western Europe or North America. The frequency of enteric diseases is indicative of lack of application of modern concepts and of adequate facilities for proper food and sanitation.

The standard of living in Japan is considerably lower than that in the western world but, as compared to most other areas of the Far East is relatively high. The bulk of rural and urban dwellers live in clean, crowded, cheaply constructed houses; the diet is simple and Spartan, consisting mainly of rice, various vegetables, fish, and a little meat. Extremely small incomes and a certain lack of general knowledge has inhibited the introduction of modern sanitation to most Japanese homes.

Local production of food is insufficient to provide an adequate diet, and large quantities of food are imported. To maintain maximum productivity of gardens and farms, fertilization by use of night soil is common practice. Therefore, all vegetables and many fruits may be considered contaminated. This is obviously the reason for the frequency of typhoid fever, amoebic and bacillary dysentery, and many parasitic intestinal diseases. Water supplies, particularly in rural districts, are frequently contaminated by ground water. Consequently, washing of foods cannot be considered protection against contamination.

Fish and other sea foods are common items of diet. However, war-time curtailment of the fishing industry has undoubtedly decreased the supply of such foods. Flukes and other parasites not uncommonly infest the sea foods, and the native custom of eating fish raw is responsible for many human infestations with flukes and tapeworms.

Since the number of locally raised cattle is small, considerable beef has been imported. Some veterinary control of animal diseases has been exercised and veterinary inspection at the time of slaughter of animals is usual. The extent and efficiency of veterinary services are not known. Further reference is made to the inspection of meat, meatfoods, and dairy products under the section on Veterinary Services.

The dairy industry is very limited and largely confined to the vicinity of cities; the largest herds of cattle are reported to be on the island of Hokkaido. Methods of milk production and the enforcement of sanitary measures to provide a safe fluid milk supply do not conform to approved sanitary procedures. Pasteurization is not the common practice. Bacteriological examinations of milk are made infrequently. It is reported that some animal disease control work has been performed in milk producing herds.

Civil Affairs officers should recommend that all native eating establishments initially be placed "off limits" for troops. Later an approved list may be compiled of those places which maintain satisfactory standards of sanitation. Before any native establishments are allowed to serve food to troops, an examination of food handlers, including stool examination, should be performed.

MEDICAL SUPPLY

The importance of the medical supply problem to civil affairs public health personnel in an occupied area cannot be too forcibly emphasized. The success of control programs for infectious and communicable disease, including malaria and venereal disease, will be greatly dependent upon the availability of medical supplies. Without essential vaccines, drugs, and chemicals, successful control of typhus, typhoid, smallpox, gonorrhea and syphilis cannot be effected and adequate provision cannot be made for care of the sick and wounded.

Both the quantity and variety of medical supplies to be furnished in an occupied area will be the minimum amounts considered essential to meet the basic needs of that area. In arriving at the types or variety of medical items to be furnished, consideration has been given to the preexisting status of medical care in the area to be supplied. This should indicate to Civil Affairs public health officers the necessity for precautions to protect medical installations and to prevent dissipation of medical supplies in the country being occupied.

Public health officers should become familiar with the medical items which are to be made available for care of the civilian population; also these officers should have a knowledge of the preexisting status of medical care in the area. Such knowledge should facilitate judicious use of available supply items and should prevent the establishment of medical programs or practices which increase the status of medical care above prewar levels and for which supplies have not been allotted. This should not deter the use of any necessary immunizing procedures or other indicated methods for control of communicable disease endangering the health of occupying troops, though such practices may not have been in force under preexisting medical care programs. The paramount concern of the public health officer at all times should be the protection of the health of Allied troops in the area.

At the earliest possible time, the officer responsible for medical supplies for the occupied area should make available to other public health officers the following data:

1. A list showing items of medical supplies which will be available in the area and the landed cost price for each item.

2. An allowance list, either by item or by unit, indicating the quantity which has been provided for 100,000 civilian population per month.

3. A listing of veterinary and dental items indicating the same factors as in (1) and (2) above.

4. An instruction memorandum or civil affairs order outlining the system of distribution to be used by the headquarters, with the necessary forms to be used for proper bookkeeping and accounting.

5. Necessary translations in the native language of all lists, orders, or instructions pertaining to medical supplies which will be used by the civilian medical personnel or the recognized government of the country.

In preparing the above lists of allowances and costs by item, the senior public health supply officer should bear in mind that the several packed units to be supplied, for example, basic medical unit, supplemental tropical unit, are designed to care for 100,000 persons per month. The allowance for each country has been calculated from factors based on the general level of medical care in the country and the availability of local medical supplies. These factors are shown in the lists published by Army Service Forces, Subject: "Civilian Supplies in Occupied Territories—Medical Supplies." With these factors, it is possible to prepare an individual list showing the allowance of each item for 100,000 population per month in each country.

In theaters of operation in which civil affairs will operate, it is assumed that the various areas to be occupied by Allied Forces will be subdivided for administrative purposes using probably either geographic or preexisting political boundaries to determine the various subdivisions. The civil affairs public health officer for each subdivision should be responsible to the chief civil affairs public health officer of the area for distribution of medical supplies in his particular subdivision. It is also assumed that in each area strictly under civil affairs control there will be a supply officer to handle details of medical supply under the chief civil affairs public health officer.

In every area which has been occupied, the availability of local medical supplies will be an important consideration. As soon as possible after the occupation, the medical supply officers should determine the availability of local sources of supply and through proper channels should make arrangements for rehabilitation of those facilities capable of producing medical supply items. The early reestablishment of biological producing concerns is most important and should receive early consideration.

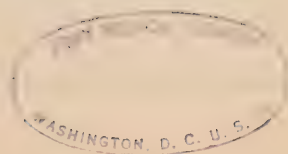
In every area, the medical supply officers should familiarize themselves with the problems of disease endemic to the area and insure supplies adequate to combat epidemic outbreaks of such disease.

In the organization of the Medical Supply Service in every area, each chief medical supply officer should consult with the civil affairs finance officer in establishing the types of supply accounting and book-keeping to be used. As guides which may be helpful, memorandum and forms on supply issued in the Italian Theater are included. (See app. D.)

In liberated areas of friendly or allied governments, assistance may be expected from the medical representatives of those governments. In such areas, the greatest use of normal channels of distribution of medical supplies should be made; civil affairs public health personnel should act under such circumstances in supervisory or control capacities. It may be possible to use medical wholesale firms for distribution of supplies if such methods are satisfactory to both civil affairs authorities and the local government.

Effort should be made as soon as possible to change the distribution of supplies from automatic issuance by units to individual requisitions by items. Every effort should be made to accomplish this by the end of the first 6 months of occupation.

The medical supply officer should become familiar with Army medical supply installations in the area of operations and maintain liaison with the appropriate base medical officers of the area.



DENTAL SERVICE

Dental surveys in camps for Japanese prisoners have indicated that the incidence of dental disease in Japan is less than that in the United States. The less refined diets in Japan may account for a smaller incidence of dental decay and pyorrhea. Based on this information, it may be presumed the dental problems in the Japanese Empire will be less than in many other countries.

In the initial phases of occupation, dental work should be of emergency type. If indicated, dentists should assist physicians in care of casualties; other types of emergency dental care including removal of infected, abscessed teeth, removal of cysts, treatment of cellulitis and osteomyelitis of dental origin, treatment and reduction of fractured jaws and treatment of acute mouth infections may be undertaken.

In later phases where the numbers of dentists are limited and dental supplies are inadequate, restorations should be limited to oxyphosphate of zinc cement. Restoration of Japanese soldiers' teeth with oxyphosphate cement is common practice at the present time. It is recommended that no attempt be made to continue prophylactic dentistry and that only larger cavities should be restored. If local personnel and dental supplies are adequate, there is no reason for limitation of the type of dental service offered to civilians. Bridge work and dentures should be done only under such circumstances.

VETERINARY SERVICES ¹

Important factors in the ability of populations now included in the Japanese Empire to be self-sustaining, so far as food is concerned, will be the number and condition of the livestock in that Empire. Unless sufficient healthy animals are available both for food and work purposes, a large part of the foodstuffs necessary for the subsistence of the civilian population must be supplied. Adequate provisions for the control of animal diseases is, therefore, fundamental in the civil affairs program.

Aside from the conservation of food through the control of diseases of food-producing animals, the civil affairs administration will also be concerned with those diseases of animals transmissible to man either directly or through the agency of meat, meat-food, and dairy products. Thus, civil affairs authorities will be concerned with those diseases which are (a) directly transmissible to man, thus endangering the health of troops and the civilian population; (b) diseases not transmissible to men, but which may deplete the livestock population and markedly impair local sources of meat, meat-food, and dairy products; (c) diseases not necessarily of importance as regards transmission to man, or from the food supply standpoint, but which occur among draft animals, thus impairing the transport system in places where animal draft is essentially the only means of transportation. The veterinary part of the civil affairs program should include full consideration of all matters concerned with the production and handling of meat, meat-food, and dairy products for human consumption. This, of course, involves methods, procedures, and sanitary conditions in connection with the production and handling of foodstuffs. The more commonly reported bacterial, virus, and protozoan diseases of animals found in this locality are briefly discussed in the following paragraphs.

Anthrax

Distribution and prevalence. The disease is common throughout the world and is especially prevalent in Asiatic countries where

¹ Prepared by The Veterinary Division, Office of The Surgeon General.

sanitary science is not advanced. While practically all mammals are susceptible to some degree, herbivorous animals are the most susceptible. Swine and man possess a greater degree of natural resistance.

Epidemiology. The etiological agent is *Bacillus anthracis*. In its spore stage, it is one of the most resistant of pathogenic organisms and has been reported by Japanese workers to survive in a dry state for at least 40 years. The source of the agent is usually soil. Damp, marshy, or periodically flooded areas favor the growth of the organism. The disease is commonly spread by contamination of the soil, drinking water, and forage with the excreta and discharges of infected animals. Infected animals are particularly susceptible to attack by blood-sucking flies, principally of the Tabanidae group, which may in turn transmit the disease. Animals and birds which may feed on infected carcasses are potential spreaders. In certain areas, the disease appears enzootically nearly every year, usually in the warm months.

The period of incubation may vary from 1 to 14 days but is seldom less than 3 days. The duration of the disease before death supervenes is usually 2 to 5 days, although many animals die within 1 to 2 hours after the first appearance of symptoms.

Recommended program of control. Carcasses of infected animals should be burned or buried deeply without opening as spores are not readily formed in the absence of oxygen and the vegetative forms of the anthrax organisms are easily destroyed. Areas contaminated with the excreta and discharges of infected animals should be disinfected or burned over. An anthrax spore vaccine in saponin known as "Carbozoo" has been shown to confer a high degree of immunity when administered by the intradermal route. Anti-anthrax serum is of value in promptly conferring passive immunity to animals on premises where the disease is present, and, when administered very early in the disease, is of therapeutic value. It is not practicable or desirable, however, to endeavor to control anthrax in lower animals by attempting to treat all cases of the disease. Infected animals should be destroyed to prevent spread of the disease.

Brucellosis

Distribution and prevalence. The disease is known to be present in China, the Philippines, and the Dutch East Indies. The disease is not seasonal, but occurs throughout the year.

Epidemiology. It is a disease of animals and man caused by one of the three species of *Brucella*, namely *Brucella melitensis*, *Brucella abortus*, and *Brucella suis*, the chief hosts of which are the goat, cow, and hog, respectively. The disease in man is commonly known

as "undulant fever." The disease in animals has no pronounced clinical symptoms other than those associated with the act of aborting. In man there is usually continued fever, profuse perspiration, frequent relapses, and rheumatic pains, although no one of these symptoms can be said to be typical of the disease.

Recommended program of control. The agglutination test should be conducted on blood serum from cattle that are to be used for milk production and the reactors eliminated. Further, all milk for human consumption, including that for butter and cheese production, should be properly pasteurized.

Sanitary control by providing a maternity barn distant from the herd for isolation of cows until abortion or calving has occurred and discharge has ceased is indicated. Preventive vaccination, especially of calves, with a low-virulent, living culture of *Br. abortus* provides an effective means of combating the disease.

Blackleg

Distribution and prevalence. This disease is prevalent throughout the Japanese Empire although it has not been a very serious disease problem in recent years. This is mainly due to vaccination which gives protection for at least 12 to 18 months, after which time the animal acquires natural immunity.

Epidemiology. Blackleg is caused by an anaerobic spore forming organism, *Clostridium chauvoei*. The disease affects young cattle between 6 months and 2 years of age. Other susceptible animals are sheep and goats. The organism occurs in the soil and when pastures once become infected, the disease will appear yearly in susceptible animals. Infection may occur through the digestive tract or by wound infection.

Recommended program of control. Treatment of affected animals is unavailing and not recommended as they may be the means of disseminating infection. Blackleg bacterins for protection against the disease give excellent results. In herds where losses have occurred susceptible animals should be removed from the infected area for 4 to 7 days following vaccination to allow time for development of immunity.

Glanders

Distribution and prevalence. Glanders is widespread throughout the Far East and is a scourge that has caused tremendous losses of horses and mules, especially when concentrated under wartime conditions.

Epidemiology. Glanders is caused by *Malleomyces mallei*, and is primarily a disease of members of the horse family, although it occurs

occasionally in man. The infection in horses and mules may be either acute or chronic with the acute form being more frequent in mules than in horses. Infection is usually acquired by ingestion, or less frequently by inhalation of contaminated material and through wounds of the skin. Human infections may occur in those in close association with diseased animals, or among individuals conducting autopsies on glanderous animals. Infections have also been reported in man following the ingestion of improperly cooked meats from glanderous animals or exposure in the laboratory. The highly infectious nasal discharges of horses which contaminate the surroundings, especially feeding and watering troughs, are responsible for most of the infections.

Recommended program of control. Attempts to protect horses and mules against glanders by use of biologics have thus far proved unsuccessful. Eradication of the disease may be achieved by holding all susceptible animals in an area under strict quarantine pending the outcome of diagnostic procedures such as mallein testing and the complement-fixation test, and the reactors killed and disposed of by cremation or burial. Testing should be repeated at 21-day intervals in regions where the disease is known to exist.

Hemorrhagic Septicemia

Distribution and prevalence. Hemorrhagic septicemia is a collective term for certain diseases of various animals characterized by the presence in the blood of bacteria and toxins of the Pasteurella groups. Hemorrhages in the body tissues and organs occur frequently. The diseases are world-wide in distribution, have a high mortality rate, and affect horses, cattle, sheep, buffalo, and swine.

Epidemiology. The etiological agents are small Gram-negative, ovoid to elongated nonspore-forming rods belonging to the Pasteurella group. Since their cultural and biochemical reactions are essentially identical, it has been proposed that they be recognized as a single species. Organisms of the Pasteurella group are found frequently in the upper air passages of normal animals. Apparently these organisms become pathogenic when the normal resistance of the animals has been lowered as a result of exposure to cold rains, long shipments by rail, etc.

Recommended program of control. The employment of bacterins prepared with the specific organism involved is indicated for the prevention and control of hemorrhagic septicemia in cattle and horses. Immune serum is useful to protect cattle that have been exposed and in treating animals in the early stages of the disease. The elimination of predisposing factors such as overexertion and lack of proper amounts of feed and water will tend to reduce the incidence of the disease.

Tuberculosis

Distribution and prevalence. Tuberculosis is widespread throughout the Japanese Empire and presents one of that nation's major public health problems. It was introduced into the livestock population of the country some 30 years ago through the importation of cattle and today is found wherever cattle are raised.

Epidemiology. This part of the subject has been previously discussed.

Recommended program of control. In the United States, the plan for controlling the disease is the testing of animals, using intradermic tuberculin and slaughtering reactors. While this method may not be practical during the period of military occupation, nevertheless, herds from which milk for troops is to be used should be tested and the reactors removed. Milk, of course, should be pasteurized.

Tularemia

Distribution and prevalence. Tularemia may be considered a new disease, as it has only been recognized as such since 1921. It was first reported in Japan in 1925, where it is known as "Ohara's disease."

Epidemiology. The etiological agent is *Bacterium tularensis* or, as designated in Bergey's Manual, *Pasteurella tularensis*. The disease occurs in nature as a fatal bacteremia of wild rodents, especially rabbits and hares. It is transmitted from the lower animals to man by the bite of blood-sucking insects or from handling infected animals. The incubation period in man is usually 3 to 9 days. The initial lesion usually develops into a sore, following which the associated lymph glands become enlarged and tender.

Recommended program of control. Approximately 90 percent of human infections are reported to have been acquired from skinning and dressing infected wild rabbits. The wearing of rubber gloves when handling rabbits should be encouraged, since the organism is known to penetrate the unbroken skin. Thorough washing of the hands and the application of tincture of iodine to scratches and abrasions are recommended.

Equine Encephalomyelitis

Distribution and prevalence. Equine encephalomyelitis is enzootic in North and South America, and Europe, and there is suggestive evidence that the disease is present in parts of Asia now under Japanese domination. It is possible that some of the ill-defined encephalomyelitides and so-called "forage poisoning" are cases of this disease. It is the most important equine disease in the United States; it is estimated that since 1930 approximately a million horses and mules have been affected.

Epidemiology. The etiological agent is a filtrable virus which occurs in four immunologically distinct types: the Eastern and Western types, enzootic in parts of North and South America; the Venezuelan type, enzootic in Venezuela, Colombia, and Trinidad; and the Borna types, enzootic in Europe. The equine encephalomyelitides of the Americas differ from the European Borna type in two respects. Those of the Americas are known to produce a fatal encephalitis in man, and are transmitted by blood-sucking anthropods, mainly mosquitoes. On the other hand, no human infections with Borna disease have been reported, and its seasonal incidence does not suggest insect transmission. In the United States, in addition to equines and man, natural infections have been reported in pigeons, pheasants, a prairie chicken, and deer. It is essentially a disease of pastured animals and adult male farm workers. In North America, outbreaks reach their peak in late summer and disappear with the coming of killing frosts.

Recommended program of control. In regions where equine encephalomyelitis occurs, horses, mules, and burros should be actively immunized against the disease by the use of chick-embryo vaccine prepared with the indigenous type of encephalomyelitis virus. The vaccine should be administered intradermically in two doses 7 days apart and the vaccination repeated annually. Mosquito-control measures, proper screening of barracks, and the use of mosquito repellents are indicated for protection of personnel. Vaccination of persons unusually exposed to danger of infection should be considered.

Foot-and-Mouth Disease or Aphthous Fever

Distribution and prevalence. The extent of foot-and-mouth disease in the Japanese Empire is unknown, but it is an established fact that two outbreaks of the disease which occurred in the United States were traced to the importation of contaminated cowpox vaccine virus from Japan.

Epidemiology. The etiological agent of the disease is filtrable virus. Cross immunization tests indicate that there are at least three types of the virus. The three types are designated "A," "O," and "C." Transmission is usually by the direct or indirect transfer of the virus in saliva admixed with fluid from ruptured vesicles of the oral cavity. Milk, urine, and excretions from infected animals may also contain the virus. Meat or other parts of animals slaughtered in the febrile stage of the disease may be infectious, and feeding of such products to susceptible hogs often results in a spread of the infection. The disease spreads rapidly and has an incubation period varying from 1 to 7 days. The disease occurs readily in all cloven-footed animals and infrequently in man. The horse is not susceptible and is used as a test animal to differentiate the disease from vesicular stomatitis.

Recommended program of control. The slaughter of infected and contact animals may be used in the beginning of the outbreaks. If this procedure is not successful in curbing the disease, then rigid quarantine methods should be instituted. Passive immunization with antiserum may be indicated for the prevention and treatment of the disease in certain instances. Active immunization by means of the simultaneous administration of the indigenous type of virulent virus and its antiserum might be considered if the immunizing agents are available, but the results by no means are markedly satisfactory. Quarantine should not be lifted until 90 days after all evidence of the disease has disappeared. Animals have been known to be carriers of the virus for 8 months after clinical recovery. Special care should be taken to prevent transmission of this disease to other places or countries, including the United States, through shipments of material exposed to contamination with the virus of foot-and-mouth disease.

Hog Cholera

Distribution and prevalence. Hog cholera is a devastating disease that has caused considerable annual losses in Japan in recent years.

Epidemiology. The etiological agent is a filtrable virus which is pathogenic only for swine. In most instances the virus is accompanied by pathogenic bacteria. While hog cholera is transmitted principally by direct contact with sick animals or their excretions, many outbreaks have been attributed to the feeding of infected uncooked pork trimmings. The latter is always a hazard where civilians are permitted to collect garbage from Army messes. The disease is highly contagious. The incubation period is usually 5 to 6 days. The disease is first manifested by a high fever, lassitude, inappetence, and a tendency for the animals to crowd together.

Recommended program of control. Due to the high mortality rate of the disease, serious losses can only be avoided by immunization of the animals. The recommended methods are the simultaneous use of immune serum and virulent virus, or the use of crystal-violet vaccine. The latter type vaccine contains inactivated virus and eliminates the danger of spreading the disease, which may occur from the use of the virulent virus. The simultaneous method of vaccination produces a lifelong immunity, whereas the crystal-violet vaccine produces an immunity lasting for only approximately 6 months.

Rabies

Distribution and prevalence. Rabies is a specific encephalitis caused by a virus which has a strong affinity for nerve tissues. It is world-wide in distribution, and has for years been a scourge of the Asiatic countries, especially the Philippines. In Japan, through the exten-

sive use of prophylactic vaccination of dogs, the disease is not usually found in epizootic proportions although it continues to be a serious public health problem. It is often spread over great distances by the transportation of stray dogs in the incubation stages of the disease. Rabies is not a seasonal disease. When the disease occurs among wild animals, its eradication becomes difficult.

Epidemiology. The virus of rabies produces the disease in all warm-blooded animals, including man. Transmission is usually through the bite of a rabid animal of the carnivora type. The virus may be present in the saliva of rabid dogs 6 to 8 days before the clinical symptoms appear. The incubation period in natural infections is variable, and may be as short as 14 to 16 days or as long as 5 to 6 months; bites on the head and neck resulting in a shorter period of incubation than those on the extremities.

Recommended program of control. The destruction of all stray dogs should be the first step in the control of the disease. Other dogs should be restrained to the owners' premises or if on a public highway should be on a leash or effectively muzzled. Vaccination of dogs against rabies with one injection of an approved vaccine is of practical value, but should not be accepted as sufficient in itself to control the disease. Any animal that has bitten a person or is suspected of being rabid should be kept in confinement under observation for 14 days, or until symptoms appear. If no symptoms have developed in this time, the animal may be regarded as having been incapable of transmitting the disease. The brains of all suspect animals which have died or been destroyed should be examined for the presence of Negri bodies. If Negri bodies are not found, a 10 percent suspension of the brain tissue in hormone broth should be inoculated intracerebrally in 0.03-cc portions into several young white mice for diagnostic purposes.

Rinderpest

Distribution and prevalence. Rinderpest is enzootic in practically all parts of Asia, and for years was the most important livestock problem in the Philippines.

Epidemiology. The disease is an acute febrile affection of ruminants characterized by a croupous, diphtheritic inflammation of the mucous membranes of the alimentary tract, usually accompanied by a profuse bloody diarrhea. The etiological agent of rinderpest is a filtrable virus which is commonly spread from animal to animal by contact, and through contaminated food and water. The incubation period of the disease varies from 3 to 9 days.

Recommended program of control. Immune serum may be used on recently infected herds for animals in the incubation stage, but it

has little value for treating animals manifesting clinical symptoms of the disease. Methods of immunization include the simultaneous use of immune serum and virulent blood, or better, the use of tissue vaccines in which the virus has been inactivated chemically. One of the latter types of vaccines that has proved successful is the Kelser tissue type vaccine which is inactivated with chloroform.

Trypanosomiasis

Distribution and prevalence. A trypanosomiasis known under the name of surra is common in South China, Burma, India, the Philippines, and other southern Asiatic countries.

Epidemiology. The cause of the disease is *Trypanosoma evansi*. It is usually transmitted by blood-sucking flies, principally of the Tabanidae group. It is always fatal for the equine species and dogs, but infrequently for cattle, water buffalo, elephants, and camels. The low fatality rate for cattle and water buffalo makes them important factors as carriers. Since potential vectors are present in all countries, the introduction of animals in the carrier state into areas free of the disease is always a great hazard.

Recommended program of control. There is no known method for the immunization of animals against surra and treatment of infected animals with the available trypanocides is usually discouraging. The disease in horses can usually be diagnosed through microscopic demonstration of the organism in wet blood preparations. Several examinations may be necessary, especially in cases in the early stages of the disease. To detect carriers, the complement-fixation test for trypanosomiasis should be applied, when possible, to the serum of all animals prior to movement from an infected area into an area free from the disease. Failure to find trypanosomes in fresh blood preparations is insufficient evidence to rule out carrier animals. In known infected regions, horses should be stabled in areas free from trees and underbrush and distant from cattle and water buffalo. Fly repellents effective for at least 24 hours and nontoxic to mammals should be employed.

Piroplasmoses

Distribution and prevalence. The piroplasmoses are a group of diseases caused by a genus of sporozoans (*Babesia*), parasitic in the red blood corpuscles of cattle, horses, sheep, and dogs. The diseases are transmitted by ticks and are enzootic in all tropical and subtropical countries.

Epidemiology. The principal symptoms of the disease are progressive anemia, hemoglobinuria, and icterus.

Animals surviving an acute attack usually remain carriers for long periods of time, and as such are capable of infecting ticks. Infection immunity continues as long as the animals remain carriers. However, under adverse conditions, resistance of the carrier animals may be lowered to such an extent that latent infection flares into the acute form. Further, recovering from one type of infection does not confer immunity against other types to which the animal is susceptible.

Bovine piroplasmoses, or the so-called tick fevers, are indigenous to all tropical and subtropical regions of the world and are caused by either *Babesia bigemina* or *Babesia bovis*.

Equine piroplasmosis caused by *Babesia equi* is known to be present in India.

Canine piroplasmosis caused by *Babesia canis* has been reported from India, China, the Philippines, and other Asiatic countries. It proves fatal in a considerable percentage of cases.

Ovine piroplasmosis caused by *Babesia ovis* is known to be present in China.

A definite diagnosis should be based upon detection of the specific *Babesia* in the red blood corpuscles.

Recommended program of control. Disease-free animals should not be pastured in tick-infested areas, nor fed fodder originating from such areas. Animals introduced into tick-free areas should be received only after disinfestation.

Anaplasmosis

Distribution and prevalence. Anaplasmosis is generally regarded as a tropical or semitropical disease, but it also occurs in regions having low winter temperatures. It has been reported from the following Asiatic countries: Cochin-China, Java, the Philippines, and Formosa. It is primarily a disease of cattle, although buffalo, sheep, and camels are reported to be susceptible. The death rate in cattle may vary from 25 to 60 percent.

Epidemiology. The etiological agent, *Anaplasma marginale*, invades the red blood cells and causes a febrile disease characterized chiefly by symptoms of anemia and icterus. Another variety, *Anaplasma centrale*, has been reported and is claimed to produce a more benign form of the disease than *Anaplasma marginale*. Anaplasmosis is transmitted by ticks, blood-sucking flies and mosquitoes; moreover it may be transmitted by the infected dam to the unborn calf.

Recommended program of control. No effective therapy for this disease is known. Cattle which survive an acute attack usually remain carriers. Susceptible cattle should be pastured in tick-free areas.

Parasitic Conditions Encountered in Meat Inspections

In addition to the animal diseases mentioned above, several parasitic general diseases of animals—echinococcosis, beef measles, pork measles, and trichinosis—will be of particular importance from a meat inspection standpoint, as they are transmissible to man. Because of lower standards of sanitation, the incidence of parasitic disease is much higher than in the United States.

Due to the perishable nature of meat, meat-foods, and dairy products, and to the difficulties in connection with their transportation and storage, an urgent demand for the use of such locally produced foods by both the occupying military force and the civilian population may be expected. Immediate steps should therefore be taken to survey the facilities of the meat and dairy industries and the pre-existing inspection agencies. Based on the findings of this survey, and in conformity with the policies and procedures discussed in the section on Communicable Disease Control, an adequate plan for the production and inspection of these products should be instituted. The ante-mortem and post-mortem inspections, as far as practicable, should be performed in accordance with the principles of the "Regulations Governing the Meat Inspection of the United States Department of Agriculture."

The processing, handling, and inspection of meat and dairy supplies intended for the use of troops should, whenever possible, be supervised by veterinary personnel attached to organizations. Local supplies of fluid milk, ice cream, and other dairy products for the use of troops should not be used unless properly pasteurized.

NARCOTIC CONTROL

The problem of illicit trade and use of narcotics in countries of the Far East will demand prompt action by civil affairs officials upon occupation. In most areas, the monopoly system of selling tax-paid opium to smokers has been adopted; the Far East is traditionally the area from which quantities of narcotic drugs find their way into the illicit drug markets of the world.

Unless effective and prompt action to establish narcotic control is taken by military government authorities, there is grave danger of recrudescence in illicit traffic, increase in addiction, and the possibility of addiction among personnel of the occupying military forces.

Control measures should be directed by an officer whose qualifications include broad experience in narcotic control. Upon liberation or occupation of a country or part thereof, and concurrently with the taking over of the civil administration, certain regulations should be put in force:

1. Require that all stocks of narcotics in civilian hands be reported to the military government authorities; all stocks should be placed under military government control.

2. No narcotics should be imported for civilian use, except under licensure of the military government.

3. Distribution of narcotics for civilian needs should be controlled by issuance only through relief organizations, wholesale firms, and pharmacies approved for the purpose.

4. Narcotics for civilian use should be supplied solely on the prescription of qualified medical practitioners. This requirement should be enforced by—

- a. Periodically submitting to the civil affairs authorities a report on all narcotic supplies and transactions by relief organizations and wholesale firms.

- b. Periodic inventories of narcotic stocks by qualified officials.

5. Factories for the manufacture of narcotics should be placed under the control of the military government and the establishment of new factories should not be permitted.

6. Supplies of raw materials from which narcotics are manufactured, as opium, poppy straw, crude morphine, cacao leaves, crude cocaine, Indian hemp, should not be imported except under license. The production of raw materials in the country should be placed under control of the military government.

7. In order to make possible the full functioning of a system for international control of world traffic in narcotics and raw materials as established by the international conventions of 1912, 1925, and 1931, certain procedures are indicated. Reports should be submitted by military government officials to the Permanent Central Opium Control Board.¹ The reports should include quantities of each drug and the raw materials imported or exported during the preceding quarter, indicating the source of imports and the destination of exports; also the amounts of each drug manufactured during the quarter, and stocks in hand at the end of the quarter.

8. Export from the country of narcotics or raw materials should not be allowed except under military government licensure, and then only upon certificate from authorities of the importing country that the import is within the previously estimated requirements submitted by that country to the Permanent Central Opium Control Board. In addition, transactions in manufactured drugs should be approved by the Supervisory Body of the Board and shown in its Statement of Estimated World Requirements of Dangerous Drugs for the year in which the transaction will take place.

9. All opium shops should be closed and opium pipes and other paraphernalia seized. Opium addicts, as determined by competent medical authorities, who require morphine should be supplied on prescription. Existing facilities for the treatment of addicts may require expansion and additional facilities may be required. If for any reason, immediate closure of these shops is not considered feasible, they should be placed "off limits" for troops.

10. Adequate records should be maintained of all narcotic drugs for civilian use drawn from military supplies.

¹ Branch office temporarily located at: 1322 18th St. NW., Washington, D. C.

VITAL RECORDS

Vital records may be termed the biological bookkeeping of public health and they are a basic requirement for planning, operation, and evaluation of health program.

All satisfactory and essential preexisting systems of records and reporting maintained by local public health organizations should be re-established. Reports through appropriate Civil Affairs channels should be required from local, regional, and national health departments. Such reports permit Civil Affairs medical personnel to evaluate the work of the civilian health departments and to supply essential data for reports to higher headquarters. In general reportable data should include—

1. A résumé of numbers, qualifications, and distribution of such qualified medical personnel as physicians, nurses, midwives, laboratory technicians, dentists, pharmacists, and veterinarians in the area.

2. The initial report should outline the organization and functional structure of the civilian health department.

3. Special reports should be required for disease of major importance, those occurring in epidemic incidence, and those particularly endangering health of troops. Hospitals and physicians should report immediately occurrence of disease of epidemic type or unusual numbers of undiagnosed febrile conditions. Major methods of control adopted should be stated. Reports of the nutritional status of civilians should be submitted at intervals.

4. Initial reports should include the status of such existing facilities as hospitals, sanatoria, asylums, convalescent homes, and laboratories. Estimates of anticipated requirements of equipment and personnel for adequate reestablishment of such institutions should be stated. Reports pertaining to occupied and vacant beds in hospitals and similar institutions for the sick should be made to the chief Civil Affairs public health officer at specified intervals.

5. An early inventory should be made of stocks of available medical supplies and a report submitted to Civil Affairs public health officers. Distribution should be on requisitions approved by Civil Affairs medical officers. Emergency issue of supplies could be done

without awaiting approval; under such circumstances, a report should be rendered immediately. (See Medical Supply.)

6. Each hospital should submit an emergency plan for expansion of medical facilities if warranted.

7. Reports should be submitted on sources, potability, and adequacy of water supply. Damage to public systems and estimations of equipment and time required for repairs should be outlined. Reports should be submitted following inspection by Civil Affairs public health officers, on medical installations, facilities, and personnel.

HEALTH PROBLEMS OF DISPLACED PERSONS

In certain instances, the health of large numbers of people displaced from their home communities may present a major problem to Civil Affairs administration. Such groups may include persons who have fled or have been evacuated from areas of combat, forced laborers, individuals who left home under political duress, and expatriates who may have been in present residence for varying periods. The numbers and general health of displaced persons, medical facilities required for their care, and the attitude of native inhabitants to these refugees are factors for consideration in planning.

It may be expected that many persons of the displaced population will return home at the earliest possible moment. Dangers to public health throughout a wide area will result from unrestricted movement of refugees. Consequently, such movements should be delayed until they are considered expedient; systematic planning for such a procedure is essential.

An attempt should be made therefore to guide the movement of displaced persons, and to maintain some degree of surveillance from the standpoint of epidemic control over their movement. It should be recognized, however, that measures which lead to undue restriction of movement may defeat the purpose for which designed by promoting clandestine travel and the use of unsupervised routes of travel. Program of immunization and disinfestation should be developed with a view to expediting rather than hampering the movement of returning refugees.

Public health services for displaced persons should be of the same type provided natives in the area. Inadequate facilities to care for this superimposed population may necessitate construction of additional shelters and require expansion of organizations for feeding and medical care. The circumstances of refugees will augment difficulties and problems in administering to their relief; the problems of women and younger age groups may deserve special consideration. When indicated, special camps should be established to segregate displaced populations from the native population for purposes of general sanitation, or to prevent the spread of epidemic diseases prevalent in an area through which the transient groups have passed. Segregation

or detention for purposes of care, quarantine, and delousing may be indicated under certain circumstances. At times, routine immunization of refugees who are to pass through epidemic areas may be indicated.

A public health plan for the movement of displaced persons should take into consideration the following factors:

1. Endemicity or epidemicity of disease in the area from which and to which they are to be moved.
2. Medical facilities en route and at the terminal area for medical care of refugees and for isolation of suspected cases of communicable diseases.
3. Facilities for disinfestation, bathing, and immunization of the group.

FOREIGN QUARANTINE

Foreign quarantine includes all those procedures employed to prevent the introduction of important epidemic disease from one country or area into another. This effort, while restricted to international or interterritorial travel, may at times be of extreme importance in preventing the introduction of disastrous epidemic disease and in avoiding criticism, restriction, or indemnification as a result of the preventable introduction of disease.

Quarantine properly may pertain to man, animals, or plants. While the disease of man may be the more impressive at the moment, the diseases of animals and plants may be of even greater importance. Thus, the introduction of rinderpest into the Philippine Islands in the first decade of this century caused the loss of 90 percent of the native cattle with resultant nutritional deficiency and starvation among the population; the cotton boll weevil in southern United States imperiled the economy of that section of the country. Important in many diseases is the control of insects and the prevention of their introduction into areas where they did not previously exist. Such insects, with reference to these areas, are termed "exotic." Malaria, carried by a new vector in Brazil, killed 25,000 people in 3 years; the Mediterranean fruitfly has endangered the citrus industry of Florida.

Quarantinable Diseases

The diseases of man of importance in foreign quarantine are generally those which history has proved significant. These by international convention (International Sanitary Code, League of Nations, Pan-American Sanitary Code) are smallpox, plague, typhus (epidemic or louseborne type), cholera, and yellow fever. Certain countries by national legislation have made other disease quarantinable, as leprosy in the United States and influenza in Australia. International quarantine procedures are directed exclusively against diseases thus specified, action in the case of others usually being limited to notification of local authorities. Careful reexamination of this list of diseases has not indicated that modification is required in the interest of public health at this time, for while other diseases may be acutely contagious, their

danger to the public health as a whole does not require world-wide measures.

Definition of Quarantine

"Quarantine" is a collective term, frequently used loosely, and other terms should be used for the specific components of quarantine. The removal of a case of quarantinable disease from contact with all susceptible individuals is termed "isolation." "Detention" is the term for segregation under medical observation of an individual thought likely to develop a quarantinable disease. In some instances, a suspect or contact may be allowed considerable liberty of action with only periodic examination to assure freedom from disease; this is termed "medical surveillance." It is apparent that for military personnel, the constant availability of medical supervision, the holding of sick call, and restriction of movement constitutes medical surveillance, and under conditions permitting this management of exposed or suspected persons no special additional steps need be taken.

Foreign Quarantine in War and Peace

In the literature on quarantine, many impressive references are made to historical epidemics which at times decided wars and the future of nations more potently than did force of arms. Due to improved sanitation and other factors of preventive medicine, the peacetime requirements of international quarantine have become greatly reduced. This does not indicate they are nonexistent. During wartime, with unprecedented travel of personnel, the problem has required reexamination and some reorientation.

Variation in Quarantine Problems

It should be emphasized that the quarantine problems on one area are usually not the same as of another and a universal code of quarantine regulations must express principles at the time rather than fixed detail. The greatest concentration of quarantinable disease is in the Far East where plague, epidemic typhus, cholera, and smallpox are endemic. Yellow fever, of paramount importance in Central Africa and Northern South America, is lacking in this section of the world. Such differences determine international policy, which for instance in the United States and Australia requires precautions against all of the diseases with a given level of intensity to assure effectiveness. In the Philippine Islands, the level of intensity is necessarily higher in some respects than in the Continental United States because of proximity to all of the quarantinable diseases except yellow fever. In India, however, foreign quarantine is directed solely to

prevention of the introduction of yellow fever since all the other important quarantinable disease are endemic.

Variation in Insect Control Problems

Similar local considerations modify insect control. Two distinct problems are presented. The first is the introduction of a disease which can be carried by insects already present in the area. Under these circumstances, the more important factor is the human or animal cases of the disease from which local insects might be infected. The second problem is the introduction of new insects which might be more efficient vectors of diseases already present. This is particularly important in malaria. Climatic factors greatly influence insect control. Thus the introduction into the United States of a case of yellow fever must be carefully guarded against south of a line roughly from Philadelphia to Los Angeles, where breeding of the vector insect is favored; north of this line exposees may be allowed full liberty. In Australia, the policy has been adopted that military personnel from malarious islands to the north should be repatriated only into the southern third of the continent where proper conditions do not exist for generalized prevalence of an efficient vector.

Responsibility for Quarantine

In the United States and most other countries of the world, the responsibility for foreign quarantine has been placed with the national public health service, and in the case of animals and plants, with the national agricultural agency. Military interest has required adjustment of policy in this regard since the Army is charged with the medical protection of its personnel and of the populations of occupied territories. Thus, in some areas it carries out the functions or meets the requirements of the civil government as it may mutually be agreed they shall apply to military operations. It is to be pointed out that the term "as they apply to military operations" does not necessarily imply the full application of the civil code, certain allowances being commonly agreed upon in view of military immunizations, control of personnel, and expediency of action. The extremes of adjustment in this regard are shown by Australia which has reserved to the Commonwealth quarantine authorities full control over all national quarantine, and by New Zealand where Parliament specifically relieved the national authority from the responsibility and gave it to their own and to the United States military organizations with reference to military traffic. The policy in the United States is midway between these extremes, over-all supervision being reserved for the Public Health Service and the Department of

Agriculture in their respective spheres, but the execution of many functions being the duty of the armed forces. The closest liaison with coexisting public agencies should be maintained in the interest of quarantine without friction or recrimination and, with proper but not excessive consideration of military convenience and necessity. At a rule, preexisting civil quarantine codes will have been adjusted to local problems, and should be continued as far as practicable until specific provisions can be carefully reexamined.

Basis for Quarantine

With reference to quarantinable diseases of man, quarantine has in the past been based upon consideration of exposure of the individual to disease and upon examination to determine presence of the disease. The first has been accomplished by considering certain areas and ports of the world to be infected, and all persons from such places to be suspects. This supervision was usually applied rigidly to persons of lower economic class, while first cabin and aircraft passengers were generally assumed to be excusable from close quarantine supervision. Information as to the infected status of areas was ordinarily obtained through reports by consuls sent to the parent country through the Department of State. Such officials also sent information with each vessel by means of the Bill of Health, the usefulness of which has however become seriously challenged so that it has been discontinued in many countries and probably will be so shortly in the United States. In peacetime, international epidemiological reports were broadcast through international health agencies such as the Office of Public Hygiene at Paris, the League of Nations at Geneva and Singapore, and the Pan-American Sanitary Bureau at Washington. This practice is, of course, restricted during the war.

Physical examination of suspects was ordinarily accomplished by "physical inspection," a rapid observation of individuals to determine freedom from quarantinable disease. The efficiency of this examination has been challenged and its application to large numbers of refugees or troops may be difficult. Thus, with reference to military personnel and others traveling under military jurisdiction, it has become apparent that quarantine may more efficiently be based upon broad immunization for the quarantinable diseases and upon military status which, as noted before, constitutes a continuing medical surveillance. Much quarantine detail can be eliminated by assurance that military criteria for immunization are followed out. Detailed investigation of exposure to quarantinable disease within their incubation periods may, therefore, be contemplated only in individuals not so immunized.

Flexibility of Quarantine Control

This will not set aside intelligent modification of policy as may be required by occurrence of quarantinable disease, and no policy can be expressed which will replace the intelligent application of measures of preventive medicine in the hands of competent medical officers. It may be noted that the value of immunization, as accepted by the military and civilian health agencies of the United States, is not recognized by all countries. Thus, Australia has refused to modify quarantine procedures on the basis of immunization, and the immunization of some armed forces of the United Nations is incomplete.

An attitude of critical realism should be maintained in quarantine so that negligence is avoided as well as quixotic overemphasis.

APPENDIX A

ORGANIZATION OF CIVIL HEALTH SERVICES IN JAPAN PROPER

Japan Proper consists of a long narrow group of islands, the most important of which are Hokkaido, Shikoku, Honshu, and Kyushu, lying off the east coast of China, between 25° and 50° north latitude. The land area of Japan proper is 148,756 square miles. The population, according to estimate for 1940, was 73,000,000. Japan is therefore among the most densely populated countries in the world. The approximate populations of the six largest cities in 1940 were as follows: Tokyo, 6,778,800; Osaka, 3,252,300; Nagoya, 1,328,000; Kyoto, 1,089,700; Yokohama, 968,000; Kobe, 967,000. The next largest city has a population of approximately 344,000 and there are 32 cities with populations between this figure and 100,000. For administrative purposes, Japan proper is divided into 47 Ken or Prefectures, including the three urban prefectures of Tokyo, Kyoto, and Osaka.

National Health Department

There is a strong central health authority under the Ministry of Health and Welfare, highly complex in its organization and exercising control over many functions which are not ordinarily the concern of health departments in the United States. Authority and responsibility in health and sanitation stem from this organization through the prefectural governors to a prefectural health department in each of the 47 prefectures.

Prior to 1938, the central health authority was the Sanitary Bureau which comprised four main divisions, designated respectively, hygiene, acute infectious disease prevention, chronic infectious disease prevention, and medical affairs; a division of planning was added in 1937.

By Imperial Ordinance dated 11 January 1938 the central health authority was reorganized bringing together a number of related agencies and bureaus to form the Ministry of Public Health and Welfare, which is presided over by a cabinet member, the Minister of Health. Subsequently certain changes in organization were effected, so that in 1941 the ministry comprised five principal bureaus with several divisions each, three branches, and a number of institutes and other institutions related to health or welfare. The revised organization of the Ministry of Public Health and Welfare is shown below:

Administrative :

- Secretariat Division
- Document Division
- Fiscal Division

Bureau of Population :

- General Affairs Division
- Administration Division
- Maternal and Child Division
- Physical Training Division

(The Bureau of Physical Education was abolished and its duty was transferred to this bureau).

Bureau of Hygiene and Sanitation :

- Administration Division
- Medical Affairs Division
- Sanitation Division
- Drugs Division.

Bureau of Preventive Medicine :

- Chronic Infectious Disease Prevention Division
- Acute Infectious Disease Prevention Division
- Tuberculosis Division

Bureau of Livelihood :

- Livelihood Division
- Housing Division
- Protection Division

(The Bureau of Social Affairs was abolished and its duty was transferred to this bureau).

Bureau of Livelihood :

- Efficiency Division
- Labor Policy Division
- Labor Wages Division
- Supervision Division

Vocation Branch :

- Vocation Division
- Directory Division
- Employment Division
- Registration Division

Unemployment Adjustment Branch :

- General Affairs Division
- Transfer Division
- Project Division

Temporary Military Relief Branch :

- Division for Military Assistance
- Division in Aid of the Families of Deceased Soldiers

Institutes Under the Public Health and Welfare Department

Institute of Insurance. Established in 1938. This institute is composed of the following bureaus:

- Bureau of General Affairs
- Bureau of Social Insurance
- Bureau of Post Office Insurance

Institute for the Protection of Wounded Soldiers. This institute was established in 1937. It is composed of one office and two bureaus:

- Office of the President
- Bureau of Planning
- Bureau of Service

Organizations Related to Public Health

All of the following organizations are under the supervision of the Ministry of Public Health and Welfare. Some of these organizations have undergone a change of name since establishment. The date under each indicates the year in which it was first established.

Hygienic Laboratories:

- Tokyo Hygienic Laboratory, 1874
- Osaka Hygienic Laboratory, 1875
- Government Institute of Nutrition, 1920
- Institute of Public Hygiene, 1938
- National Leprosarium, 1927
- National Tuberculosis Hospital, 1937
- Institute for Infectious Diseases, 1892
- National Parks Committee, 1931
- Board for Investigation of Physical Training, 1932
- Board for the Investigation of the People's Physical Conditions, 1938
- Céntral Board of Health, 1880
- Board for the Investigation of the Japanese Pharmacopoeia, 1900
- Board for the Investigation of National Hygiene, 1916
- Opium Committee, 1931
- Committee for the Examination of Medical Practitioners, 1916
- Committee for the Examination of Dental Surgeons, 1916
- Committee for the Examination of Pharmacists, 1896
- Board for the Investigation of Medical System, 1938

In 1938, the situation with reference to hospitals was as follows:

| | <i>Hospital</i> | <i>Bed Capacity</i> |
|------------------|-----------------|---------------------|
| Government ----- | 38 | 15,669 |
| Public ----- | 683 | 48,297 |
| Private ----- | 3,190 | 116,401 |
| Total ----- | 3,911 | 179,367 |

In 1938, there were approximately 53,000 physicians engaged in practice, or about 8.64 per 10,000 population. It is supposed that the number of physicians engaging in civilian practice has declined coincident with extension of military operations.

Prefectural and City Health Departments

In Japan there are four units of local administration, the prefecture, which may be either rural or urban, the city, the town, and the village. Only the prefectures and the more important cities have full-time health departments. The prefectural sanitary bureau dates back to 1879. For many years it has been organized under the police department and it is presumed that this system still prevails in most prefectures. Considerable expansion in the size and functions of prefectural and city health departments has occurred in recent years, and it is probable that in the more important urban centers the health department functions as an autonomous unit.

In the urban Prefecture of Osaka, for example, the health department in 1940 comprised a Prefectural Sanitary Bureau with a director and 20 professional and technical assistants, a Health Insurance Bureau with a chief, 1 full-time assistant and 4 part-time assistants, a Public Health Institute with a director and 1 assistant, and 4 prefectural hospitals. For the city of Osaka there is a City Public Health Division with a director and 41 staff members, a City Hygienic Laboratory with a director and 9 technical assistants, and 7 city hospitals.

To cite another example, the Kanagawa Rural Prefecture had the following organization: Prefectural Sanitary Bureau with a chief, 5 physicians full-time for preventive medicine, 20 sanitarians and assistant sanitarians full-time, and 14 physicians part-time; a Prefectural Health Insurance Bureau with a chief, one technical assistant and 2 part-time physicians; 6 prefectural hospitals and clinics. In addition, cities within Kanagawa Prefecture had organizations as follows: Yokohama, population 968,091, a city sanitary bureau with a director and 17 full-time and part-time staff members, 5 city hospitals and clinics; Yokozuka, population 193,358, 3 city hospitals and clinics; Kawasaki, population 300,777, a city sanitary bureau with a staff of 4 sanitarians and 5 assistant sanitarians, 1 city hospital; Hiratsuka, population under 100,000, 1 city hospital.

In 1937 a program was initiated which envisaged the establishment of "hygiene centers" (Hokenjo) throughout Japan on the basis of 1 for each 120,000 inhabitants. It is not known how many of these are in operation; 50 were said to have been established in 1937 (Bull. Office d'Hygiene Internationals).

APPENDIX B

Organization of Health Services in Other Parts of the Japanese Empire

The organizational structure of the health departments of Formosa, Korea, Karafuto, and the Kuriles is similar to that of Japan Proper. All are ultimately responsible in matters of general policy to the Ministry of Health and Welfare of Japan.

Formosa

Formosa is an island the form of an elongated oval with a NNE-SSW axis approximately 225 miles in length. The breadth varies from 60 to 80 miles, and the total land area is 13,429 square miles. A lofty mountain axis occupies the central and eastern part of the island, the water shed being near the east coast. There is a western plain about 20 miles in width. The island is bisected by the Tropic of Cancer and has a distinctly tropical climate. The rainfall is high and well distributed throughout the year, although the southern parts become relatively dry in winter.

The population of Formosa is estimated to be 5,747,000, of which about 150,000 are aborigines of Malay extraction, between 250,000 and 500,000 Japanese, and the remainder Chinese. There are 8 prefectures including the Pescadores islands which lie between Formosa and the mainland of China. The largest city is Taihoku, situated near the northern tip, with a pre-war population of about 340,000. Other principal cities and towns with their estimated population are as follows: Tainan, 131,000; Takao, 118,000; Keelung, 100,000; Kagi, 90,000; Taichu, 81,600; Mako, 69,000; Shinchikin, 60,000; Shoka, 58,500; Keito, 54,000.

Formosa has been under Japanese rule since 1895. It is governed by a governor-general who is under the Department of Overseas Affairs of Japan. For local administration, Formosa is divided into five prefectures (Schinichiku, Taichu, Tainan, Taihoku, and Takao) and three districts. The districts are located in the less well-developed regions of the east and the Pescadores Island.

The health services of Formosa are supervised by a central board, the Sanitary Bureau, which is administered through the police department. The Sanitary Bureau has supervision over sanitation, quaran-

tine, infectious disease control, and to a considerable degree over medical care, in that hospitals generally are government controlled. The staff of the central board and prefectural departments is reported to include physicians, sanitary engineers, nurses, and laboratory personnel, but no recent organizational chart is available.

Medical facilities include 235 hospitals of which 15 are government-operated, 18 public and 202 private. Not more than 20 hospitals exceed a bed-capacity of 80 and the majority are small units of 10- to 50-bed capacity. In 1938 the total bed-capacity was about 4,000, exclusive of 4 military hospitals with a total capacity of 2,000. There were about 2,000 physicians or approximately 3.4 per 1,000 population; 407 dentists; 213 pharmacists; 170 nurses; and 1,800 midwives. Among the principal causes of death were malaria (7.3 per 10,000), tuberculosis (13.7), and pneumonia (42.4). (See TB MED 30, Medical and Sanitary Data on Formosa).

Korea

Korea is a peninsula of Asia extending southward from Manchukuo. Its length is approximately 600 miles; its width is approximately 135 miles at the base; its area is 86,000 square miles.

The population (1930) was 21,058,305 including approximately 633,000 Japanese and 68,000 Chinese. It is primarily an agricultural country; some mineral resources have recently been developed.

The capital of Korea is Keijo (Seoul), an inland city with a population of 737,214. The port city is Chemulpho, population 108,744. Other large cities are Phyongyong (Heijo), population 234,728; Fusan, 213,744; and Taikyu, 172,040. The population is largely concentrated in the southern portion of the peninsula. The climate is dry and bracing. The mean summer temperature of Keijo is about 75° F., that of winter 33° F.; the average yearly rainfall is 36.3 inches and of the rainy season, 21.8 inches. The rains come in July and August on the west and northeast coasts and from April to July on the south coast.

Korea has been under Japanese rule since 1910 and efforts have been made to create a true Japanese state. The money, postage stamps, newspapers, institutions, and administration are modeled along Japanese lines. Most of the important administration and professional posts in the Korean administration are filled by Japanese.

Public health is under the direction of the Sanitary Section of the Police Bureau of the Government General. Plans are made in the Government General's office and channeled down through provincial and country officials to the local police. A civilian health officer and 2 assistants, usually, are assigned to each of the 13 provinces. One or more physicians and a number of nurses are stationed at each

provincial hospital, and such work as is not handled by the local police and police physicians is carried on by this provincial health staff. The officially defined duties of the provincial health staff, working with the police, include arrangements for clinical tours by provincial hospital physicians, quarantine inspection at all ports, inspection of water, food, and drugs, control of epidemic and endemic diseases, and measures dealing with the control of opium, leprosy, and veterinary problems. In practice, though regular tours by the full-time provincial physicians are carried out at intervals through the year, the greatest contact with the bulk of population is made by so-called "police physicians." These physicians receive about 100 yen per month for part-time official services, and are allowed to carry on private practice at the same time; usually police doctors are found only in county seats. Practically all doctors engaged in public health work are Japanese.

The Japanese have done much to control epidemics by establishment of various laboratories for examinations of water, food, and drugs; by establishment of strict quarantine regulations; by enforcement of vaccinations against smallpox, typhoid, and cholera; by attempts to isolate lepers; by giving health courses in schools; and by overseeing thorough semiannual housecleaning of homes, stores, schools. The program has not yet reached the desired goal. Tuberculosis, venereal diseases, intestinal diseases, and leprosy are widespread. The chief faults have been that all programs are Japanese directed, enforced, and centered. The Koreans have small part in administration of the program, and little has been done to improve general health of native Koreans. One observer has stated that if the Japanese were removed, the entire public health structure would collapse.

Fresh water is plentiful in Korea. The rural communities and smaller towns use water from springs, wells, creeks, and rivers, and since night soil is used for fertilizer, most water is contaminated. Recent Japanese reports indicate 74 Korean towns now have modern water plants. Official statistics for 1938 pertaining to the 10 leading cities indicate, however, that modern water facilities supply only between 24 and 61 percent of the population of the 10 communities. All water, regardless of its source, must be considered unsafe and should be consumed or used for bathing only after proper treatment or after repeated bacteriological tests by Army personnel have approved its safety.

The night soil from most homes in Korea is collected from pails and poorly protected privies, stored in crude, leaky cisterns, from which it is removed from time to time to be used as fertilizer. The waterborne sewerage systems of Keijo, Fusan, Heijo, and Jinsen serve only small portions of the population of these cities. The same is reported to be

true in the other cities which have waterborne sewerage systems. Often, in houses connected with the sewers, the night soil is not discharged into the sewers, but rather is collected separately and taken to rural areas for fertilizer. There are only a few private septic tanks. A program has been instituted whereby night soil from inns and public hostels is gathered each day, and material from the private homes in the cities is collected once every 10 days. Such a system of night soil disposal results in widespread soil pollution and in increased prevalence of disease-carrying insects.

Medical personnel include 3,250 physicians of which approximately half are Japanese, half Korean. There are 2,200 nurses, 950 dentists, 550 pharmacists, and 1,935 midwives. There are approximately 149 hospitals with a total capacity of 6,500 beds; of these, 16 maintain 100 to 200 beds and only 3 have more than 200 beds.

Kuriles

The Kuriles are a chain of small volcanic islands stretching in a northeasterly direction from Hokkaido. Their area is 6,159 square miles; their total number is 32; present population about 17,000. The principal island is Etorofu and its chief port is Shana in Rubetsu Bay. The climate corresponds to that of northern Japan proper and the average annual temperature is 38° F. This island is divided into 4 provinces for administrative purposes. The islands are believed to have belonged to Japan at a remote date but at the beginning of the 18th century the Russians, having conquered Kamchatka, found their way to the northern port of the Kuriles and gradually pushed farther south. In 1875, the Russians relinquished their claim to all parts of the Kuriles.

The Health Department organization is under the jurisdiction of the Hokkaido prefecture. The Kuriles lie within the jurisdiction of the Nemuro branch which has its central office in the town of Nemuro. Organized local governments are found only in the 3 southernmost islands. Public health is directed by the mayor who in turn is under the jurisdiction of the prefectural governor. There is 1 hospital at Rubetsu on Etorofu but no information is available as to its bed-capacity. In 1933 there were 10 doctors in the islands but there were no laboratories or nurses. (See TB MED 24, Medical and Sanitary Data on the Kurile Islands.)

APPENDIX C

NUTRITION TABLES

Table 1. Symptoms of Nutritional Deficiencies

| Symptoms of deficiency | Calories | Protein | Vitamin A | Thiamin | Niacin | Riboflavin | Ascorbic acid | Vitamin D | Calcium | Iron |
|-------------------------------------|----------|---------|-----------|---------|--------|------------|---------------|-----------|---------|------|
| Loss of weight | X | | | | | | | | | |
| Failure to gain weight* | X | | | | | | | | | |
| Weakness, general and local | X | X | | X | | | | X | | X |
| Undue fatigue | | | | X | | | | X | | X |
| Late sitting, standing, walking* | | | | | | | | X | | |
| Inability to sit* | | | | | | | | X | | |
| Aversion to normal play* | X | X | | X | | | X | X | | |
| Muscular pains and sore extremities | | X | | X | | | X | X | X | |
| Lack of appetite | | | | X | | | | | | |
| Chronic diarrhea | | | | | X | | | | | |
| Sore tongue and mouth | | | | | X | | | | | |
| Sore lips | | | | | | X | | | | |
| Sore and bleeding gums | | | | | | | X | | | |
| Nervousness and irritability | | | | X | X | | | | | |
| Lack of mental energy | | | | X | X | | | | | |
| More severe mental disturbance | | | | | X | | | | | |
| Disposition changes | | | | X | X | | | | | |
| Poor sleep habits | | | | X | | | | | | |
| Paresthesias | | | | X | | | | | | |
| Neuritic pain | | | | X | | | | | | |
| Night blindness | | | X* | | | | | | | |
| Photophobia | | | X | | | X | | | | |
| Burning, itchy eyes | | | X | | | X | | | | |
| Lacrimation | | | | | | X | | | | |

*Children.

Table 2. *Physical Signs of Nutritional Deficiencies*

| System | Physical finding | Calories | Protein | Vitamin A | Thiamin | Niacin | Riboflavin | Ascorbic acid | Vitamin D | Calcium | Iron |
|-----------------------------------|-----------------------------------------------------------------|----------|---------|-----------|---------|--------|------------|---------------|-----------|---------|------|
| General | Under weight—loss of subcutaneous fat. | X | | | | | | | | | |
| Skin | Atony | X | | | | | | | | | |
| | Dermatitis — pellagrous, slight or severe, acute or chronic. | | | | | X | | | | | |
| | Seborrheic dermatitis about nasolabial folds, etc. | | | | | | X | | | | |
| | Perifollicular hyperkeratotic dermatosis. | | | X | | | | | | | |
| | Acneform dermatosis | | | X | | | | | | | |
| | Purpura and petechiae | | | | | | | X | | | |
| | Pallor | | | | | | | | | | X |
| | Head sweating | | | | | | | | X | | |
| Eyes | Praexerosis and xerosis | | | X | | | | | | | |
| | Dryness of conjunctiva | | | X | | | | | | | |
| | Lacrimation | | | | | | X | | | | |
| | Conjunctivitis | | | X | | | X | | | | |
| | Corneal vascularization | | | | | | X | | | | |
| | Night blindness | | | X | | | | | | | |
| | Photophobia | | | X | | | | X | | | |
| Mouth and mucus membranes. | Cheilosis | | | | | | X | | | | |
| | Fissures at angles of mouth | | | | | | X | | | | |
| | Glossitis, acute or chronic, with or without papillary atrophy. | | | | | X | | | | | |
| | Stomatitis | | | | | X | | | | | |
| | Gingivitis, acute or chronic | | | | | | | X | | | |
| | Dental caries and malformation. | | | X | | | | | X | X | |
| | Proctitis | | | | | X | | | | | |
| | Vaginitis | | | | | X | | | | | |
| Nerves: Muscular and extremities. | Weakness, especially distal extremities. | X | X | | X | | | | | | |
| | Muscle tenderness | | X | | X | | | X | X | | |
| | Paresthesia | | | | X | | | | | | X |
| | Altered reflexes | | | | X | | | | | | |
| | Lost vibratory sense | | | | X | | | | | | |
| | Hypesthesia | | | | X | | | | | | |
| | Anaesthesia | | | | X | | | | | | |
| | Bilateral polyneuropathy | | | | X | | | | | | |
| | Psychosis | | | | | X | | | | | |
| | Minor mental changes | | | | | X | | | | | |
| | Edema, especially extremities. | | X | | X | | | X | | | |

APPENDIX D

MEDICAL SUPPLY

(Forms Used in Italian Theater—for Illustration Purposes Only)

EXECUTIVE MEMORANDUM NUMBER 34

Instructions for Handling Medical Supplies

I. The following instructions have been drawn up in order to standardize the methods of receiving, storing, distributing, and accounting for the medical supplies being brought into Italy. * * * The Regional Commissioner will be responsible for carrying out these instructions, and whatever duties or responsibilities are indicated as the responsibilities of the Regional Public Health Officer, it is assumed that these duties and responsibilities will be delegated to him by the Regional Commissioner.

II. *General.*

A. A Central Medical Depot (ACC) for Medical Supplies has been set up in the vicinity of Naples under the control of the Supply Section of the Public Health Sub-Commission. Supplies * * * will be received at this depot, stored, and distributed to the Regional Warehouses on requisition (indent). Occasional shipments may be received at ports other than Naples, in which case, they will be dealt with as explained in Paragraph III, A.7.

B. Regional Warehouses will be set up under the direction of the Regional Public Health Officer. These warehouses will receive supplies from Central Depot, store and sell them to the Medici Provinciali. All supplies will cease to be the property of Allied Military Government/Allied Control Commission (AMG/ACC) when they are shipped from the Regional Warehouse to the Italian agency to which they are sold.

C. All supplies purchased by a Province will be taken into a provincial storehouse and will be distributed throughout the Province under the direction of the Medico Provinciale with the approval of the Regional Public Health Officer. One system which has been found to work very well and is recommended for use in every Province is for the Medico Provinciale to hire such personnel as may be needed to operate his own wholesale establishment; operating it on Provincial funds without profit.

D. In communes located in forward areas * * * local governmental official or unit is functioning, medical supply officers may make free issues of limited quantities of medical supplies in emergency cases (sufficient only to meet the needs of the immediate occasion), provided a certificate citing the emergency is made on the related issue vouchers.

III. *Responsibilities.*

A. Regional Public Health Officer (R. P. H. O.).

1. Set up, staff, equipment, and operate at least one Medical Supply Warehouse for the Region.

2. Maintain accounts and submit reports as specified in the accounting section of these instructions.

3. Submit long term requirements for the Region to the Public Health Sub-Commission every 6 months * * * Public Health Sub-Commission will submit information of combined requirements to Industry and Commerce Sub-Commission 15 days prior to deadline date for each period.

4. Submit to the Public Health Sub-Commission by the 10th of each month, requests for the delivery of supplies to cover the following month. * * * All regions will submit emergency requisitions (indents) when ever necessary.

5. Sell such supplies as are requested by a Province to the Province. In this respect, sales will be made "Ex Regional Warehouse." The R. P. H. O. will not be responsible for delivering the supplies to the Provinces (see III B. (3)).

6. Control prices both to the hospitals and pharmacies, and to the ultimate consumera. Prices of imported American supplies and supplies obtained from the United States Army will be charged to the first Italian agency as per the Schedule in Appendix "A." The prices of Italian supplies still in the hands or under the control of the Regions or Provinces will be established by the R. C. P. O. of the various Regions. The sale of these drugs should be encouraged by setting a fair price on them. The Pharmacist should be allowed approximately a 33 percent profit on the selling price (50 percent on cost) on patent medicines, package drugs, dressings, etc., and 50 per cent profit on selling price (100 percent on ingredient cost) on items which must compound for prescriptions.

7. Receive, tally-in, store, and notify this Headquarters of the contents of any direct shipments of supplies which may be shipped to a port in the Region directly from * * *.

8. Assist reputable manufacturers of essential drugs and biologicals to resume production, reporting to the Public Health Sub-Commission the productive capacity available by each item manufactured. This

Headquarters will render such assistance as possible in the rehabilitation of reputable firms.

9. Authorize the warehouse under his control to prepare any additional copies of reports and documents which may be needed for administrative purposes.

B. Medico Provinciale.

1. Submit to the Regional Warehouse requests for such supplies for his Province as are authorized and necessary at such intervals and times as the R. P. H. O. may determine.

2. Have deposited with the local Sub-Accountant or into the proper bank to the credit of Allied Finance Agency's (AFAs) account funds for the purchase of the supplies. The correct AFA bank account number will be designated by AFA for each Region.

3. Pick up or arrange for the delivery of supplies from the Regional Warehouse to the Province. His responsibility for the supplies will start when they leave the Regional Warehouse.

4. Distribute supplies throughout the Province by his own method of distribution, but with the approval of R. P. H. O. Regardless of the system of distribution which may be used, the following priorities will apply: (1) Hospitals and clinics, (2) doctors and midwives, (3) pharmacies and other retail channels.

IV. Accounting.

A. *Sources and types of supplies.* There are several probable sources of medical supplies. Supplies from each source must be segregated, both physically in the warehouse and on all accounting records and documents. The following accounting code letters, placed after the U. S. A. item number, will be used on all records and documents to identify the supplies by types and sources:

| Type of source | Code letter |
|--------------------------------------------------|-------------|
| 1. U. S. A. Imports----- | * |
| 2. * * *----- | * |
| 3. U. S. A. Army----- | * |
| 4. * * *----- | * |
| 5. Captured or confiscated Italian Supplies----- | * |
| 6. Captured or confiscated German Supplies----- | * |
| 7. Purchased Supplies (Specify Source)----- | * |
| 8. Miscellaneous (Other Allied Nations)----- | Specify |

Examples of the use of the above accounting codes are as follows:

10110-A Acid, Boric, USP (U. S. A. Imports)

10110-B Acid, Boric, USP (U. K. Imports)

10110-X Acid, Boric, USP (U. S. A. Army)

B. *Basis of accounting.* The cost or value of Medical Supplies received will not appear on accounting records and documents kept or prepared at the Medical Supply Warehouse for supplies imported, confiscated, or obtained from the Armies of the U. S. A. * * *

Cost will be reflected for supplies acquired by direct commercial purchase from Italian or other sources. The prices at which supplies are sold will be reflected on pertinent documents and records prepared or kept at the issuing warehouse.

C. *Requisitioning (indents)*. Requisitions (indents) for supplies will be forwarded from the Regional Warehouses to the Public Health Sub-Commission Supply Section by the 10th of the month for the following month. Requisitions (indent) will be submitted from the Provinces to such places and at such intervals and times as the R. P. H. O. may stipulate. These requisitions (indents) will be prepared in triplicate on ordinary stationery and will give the following information: (1) where and how the supplies are to be shipped, (2) the basis for the requisition (indent) that is the population of the Region or Province or an adequate reason for requisitioning more than the allowance as set forth in the C. A. D. Basis Cost and Allowance Schedule, (3) the item number, (4) nomenclature, (5) unit, (6) quantity of the item required. The original and one copy will be forwarded to the Public Health Sub-Commission Supply Section, in the case of the Regions; to the Regional Warehouse, in the case of the Provinces. The triplicate will be retained by the originating agency. Regions which receive supplies direct from the U. S. A. will submit only emergency requisitions.

D. *Sales*. Sales, based on an approved requisition, will be prepared on "Issue Voucher" F/F 18 in triplicate. (See Appendix "B".) The form will show the item number, nomenclature, unit, quantity, unit and total sales price for each item, the instructions concerning how and where payment is to be made. In order to facilitate the preparation of monthly reports (see pars. I and J below) separate Issue Vouchers will be prepared for sales from each source of supply in cases where a single requisition (indent) is filled from more than one source of supply. The amount involved in the sales will be covered by full payment into a bank for AFA, with a notation that the collection is on account of Public Health Division. Copies of the bank deposit slips will be obtained and attached to the monthly report of sales. To facilitate identification of specific items, each Issue Voucher will be paid for separately, and an individual deposit thereof made in the bank. In forward areas this procedure may not be possible, in which case, payment will be noted on the duplicate and triplicate of the Issue Voucher. The purchaser or his representative must present a signed copy of a bank deposit slip, sign the receipt certificate, and the Warehouse Officer must sign the issue certificate on the duplicate, and triplicate copies. The duplicate will be retained at the warehouse as a medium for posting to the Store Ledger. The triplicates will be accumulated until the end of the

month: and then forwarded in accordance with instructions in paragraph I below.

Issue vouchers F/F 18 for any free issues of supplies in emergency cases (as provided in par. IID) shall contain the following certificate over the signature of the issuing officer: "Emergency free issue—No organized local governmental unit in vicinity."

E. *Transfers.* Transfers of supplies between warehouses will be prepared on "Transfer Voucher" F/F 17 in triplicate. (See Appendix "C".) This form will show the number of boxes shipped and the same information that is on the "Issue Voucher," except that the prices will not be shown, and the certificate of receipt need not be signed by the receiving officer. The distribution of the copies will be the same as the distribution of the "Issue Voucher."

F. *Receiving reports.* When Medical Supplies are received at the warehouse, either directly or by transfer, they will be tallied-in and entered on the "Receiving Report" F/F 13 in triplicate. (See Appendix "D".) This form will show (1) the source of the supplies, (2) the markings on the cases (this applies only to supplies when they first come into the country), (3) the quantities received, (4) comments as to the nature and apparent cause of any damage or shortages. It is unnecessary to fill in the quantities called for on the delivery note, B/L, or equivalent document. The total number of pieces received will be reported at the top of the page. The form will be signed by the Receiving Officer. The original will be retained at the warehouse as a medium for posting to the Store Ledger. The duplicates will be accumulated until the end of the month, and then forwarded in accordance with instructions in Paragraph I below. The triplicate will be used to support claims for shortages or damage.

G. *Store Ledger.* A Store Ledger will be maintained at each warehouse on "Store Ledger" F/F 15. (See Appendix "E".) Quantities only will be recorded in this ledger. A separate page will be kept for each item by source of supply as prescribed in Paragraph IV A. On this record will be entered the date, from whom and to whom receipts or issues were made, the quantity issued or received, the voucher number, and the balance. When a physical inventory is taken, a notation will be made on the next vacant line to the Store Ledger showing the date, the remark "As per physical inventory," and the physical quantity. Adjusting entries for inventory differences should be made as outlined in Paragraph IV H before the physical figure is entered.

H. *Inventories: overages and shortages.* A physical inventory of each item will be taken at each warehouse at least once a month. If the physical inventory discloses differences, the overages will be written up on a "Receiving Report" in duplicate, and the shortages on

an "Issue Voucher" in triplicate. The facts pertaining to the case will be noted on the documents, which will be signed by the Warehouse Officer. The original and duplicate of the "Receiving Report" will be disposed of in the customary manner. The copies of the "Issue Vouchers" showing shortages will be distributed as follows: (1) the original will be retained at the warehouse except where there is a shortage of any item in excess of Lire 10,000 in which case it will be forwarded to the R. P. H. O. for review and decision, (2) the duplicate will be retained at the warehouse as a medium for posting to the Store Ledger (shortages in excess of Lire 10,000 will be entered in pencil only until they are approved by the R. P. H. O.), (3) the triplicate will be disposed of in the customary manner. If it is decided by either the R. P. H. O. or the Warehouse Officer, as may be appropriate, that any particular individual or individuals are responsible for the shortages or damages, payment for such shortages or damages will be collected and will be deposited to the correct AFA bank.

I. Monthly stock reports. At the end of each month summary reports up the transaction on each item, by source of supply, will be submitted to the Public Health Sub-Commission through the R. P. H. O. A separate report in the form of Appendix "F" will be prepared from the Store Ledger for each source of supply. These reports will be accompanied by the duplicate of the "Receiving Reports" and the triplicates of the "Issue Voucher." The reports and supporting documents will be dispatched by the warehouse to reach the R. P. H. O. by the 8th of the month, and will be forwarded by him to reach the Public Health Sub-Commission by the 15th of the month.

J. Monthly Report of Sales. At the end of each month, reports of sales will be prepared from "Issue Vouchers" in the form shown in Appendix "G"; the report will consist of a list of issue vouchers with copies of the bank payment slips referred to in Paragraph IV D. A separate report will be prepared for sales made from stocks of each source of supply. Individual issue vouchers will be listed; but specific items thereunder will not be listed. These reports will be sent to the Regional Chief Accountant by the 8th of the month, who will verify that the proceeds of all sales have been credited to the appropriate AFA bank account. Also at the end of each month a report of free issues will be prepared similar to the form shown in Appendix "G", consisting of a list of the related issue vouchers showing the medical supply and quantity.

By Command of * * *

* * *
* * *

Executive Commissioner.

Appendixes herein referred to will be supplied in sufficient copies on request of officers concerned.

Appendix A—CAD Basic Cost and Allowance Schedule.

B—F/F 18 Issue Voucher.

C—F/F 17 Transfer Voucher.

D—F/F 13 Receiving Report.

E—F/F 15 Store Ledger.

F—Monthly Stock Report.

G—Monthly Report of Sales.

NOTE.—Portions deleted and indicated by * * * refer to local organization in the Italian theater.

ALLIED MILITARY GOVERNMENT OF OCCUPIED TERRITORY

----- Division

Issue Voucher

No. -----

SOLD/ISSUED TO: -----

| Description of articles | Unit | Quantity | Price | Amount |
|-------------------------|------|----------|-------|--------|
| | | | | |

Issuing Warehouse: -----

Payable at: -----

Sale/Issue approved by: -----

(Signature and rank)

Date -----, 194-----.

(1) I certify that the articles described above were received by me on the ----- day of -----, 194-----.

(2) I certify that the articles described above were issued by me to the person(s) entitled to receive them on the ----- day of -----, 194-----, and that evidence of payment of the above total amount of ----- was produced to me in the form of Bank Deposit Receipt No. ----- issued by ----- under date of -----, 194-----.

(Signature and rank of issuing officer)

Head: -----

Sub-Head: -----

Store-Ledger Folio: ----- Tally Card No.: -----

AMG

Division

Transfer Voucher

No. _____

Transferred from: _____

Transferred to: _____

| Articles transferred | Unit | Quantity | Selling price | |
|----------------------|------|----------|---------------|--------|
| | | | Rate | Amount |
| | | | | |

(1) Above transfer approved.

_____ Date: _____ 194_____
(Signature and rank)

(2) I certify that the above articles were issued to the person(s) entitled to receive them on the _____ day of _____ 194_____.

(Signature and rank of issuing officer)

Tally Card No: _____ Store Ledger Folio (issue): _____

(3) I certify that the above articles were received by me on the _____ day of _____ 194_____.

(Signature and rank of receiving officer)

Tally Card No: _____ Store Ledger Folio (receipt): _____

AMG
Civilian Supplies Division
RECEIVING REPORT

Date _____ Report No. _____
Shipment No. _____ Convoy No. _____
Received from _____

| Description, grade, etc. | Number of bags, boxes, etc. | Unit | Quantity per B/L or delivery note | Quantity actually received |
|--------------------------|-----------------------------------|------|--------------------------------------------|----------------------------------|
| | | | | |

REMARKS (nature and cause of damage, etc., if any): _____

ARE GOODS OF STATED QUALITY (if not, state reasons on reverse) _____

MARKINGS ON CASES, ETC. _____

SIGNATURES: _____
(Officer of supplying service) (Receiving officer of CSD)

BIN CARD NO. _____

STORE LEDGER

Bin No.

Article

Folio

Unit

| Date | From whom received or to whom issued | Voucher number | Receipts | Issues | Bal- ance |
|------|-----------------------------------------|-------------------|----------|--------|--------------|
| | | | | | |

MONTHLY STOCK REPORT

----- Warehouse

For the month ending ----- Source of Supply -----

| Item numbers | Nomenclature | Unit | Beginning stock | Receipts | | | | Issues | | | | Ending stock |
|--------------|--------------|------|-----------------|----------|---------------------------------|------------------------|------------------------|----------------|------------------------------|------------------------|-------------------------|--------------|
| | | | | Imports | Transfers from other warehouses | Others (specification) | Overages in warehouses | Sales for cash | Transfer to other warehouses | Others (specification) | Shortages in warehouses | |
| | | | | | | | | | | | | |

MONTHLY REPORT OF SALES

----- Warehouse

For the month ending ----- Source of Supply -----

| Issue voucher number | Date | Name of purchasers | Amount | Date paid | Place of payment |
|----------------------------|------|--------------------|--------|--------------|---------------------|
| | | | | | |

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